



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE	
In re Application of STEPHEN F. GASS, DAVID S. D'ASCENZO, ANDREW L. JOHNSTON, JOEL F. JENSEN, SUNG H. KIM and ANWYL M. MCDONALD	Date: March 18, 2009
Serial No. : 09/929,236	Examiner Ghassem Alie
Filed : August 13, 2001	Group Art Unit 3724
For : REPLACEABLE BRAKE MECHANISM FOR POWER EQUIPMENT	

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

APPEAL BRIEF

1. Real party in interest.

The real party in interest is SD3, LLC, the assignee of the above-identified application. SD3 is a privately owned Oregon limited liability company.

2. Related appeals and interferences.

All other known prior and pending appeals, interferences or judicial proceedings which may be related to, directly affect, be directly affected by or have a bearing on the Board's decision in the pending appeal are listed below. These appeals and judicial proceedings are listed because SD3, LLC is the real party in interest and because they relate to various aspects of safety systems for power equipment. The currently pending appeals and judicial proceedings are:

1. Appeal to the Board of application serial number 10/146,527 (fully briefed).
2. Appeal to the Board of application serial number 11/401,050 (fully briefed).
3. Appeal to the Board of application serial number 10/984,643 (fully briefed).

4. Appeal to the Board of application serial number 10/189,027 (not yet briefed).
5. Appeal to the Board of application serial number 11/026,114 (not yet briefed).
6. SD3, LLC v. Dudas, 08-CV-01242 (RWR) (D.D.C.) (civil action under 35 USC 145 to obtain a patent, a motion for summary judgment filed by defendant is pending).

The Board has issued opinions in prior appeals of applications related to safety systems for power equipment and assigned to SD3. Applicant believes those opinions do not affect the present appeal; nevertheless, applicant identifies the appeals because they relate to safety systems for power equipment. The appeals are: 2007-0266 (reversing a rejection in application 09/929,227), 2007-0773 (reversing a rejection in application 10/053,390), 2007-2769 (affirming a rejection in application 09/929,242), 2007-2880 (reversing a rejection in application 11/098,984), 2007-3155 (affirming a rejection in application 09/929,238), 2007-4061 (affirming a rejection in application 10/100,211), 2008-1064 (reversing a rejection in application 09/929,237), and 2008-1843 (affirming a rejection in application 10/345,630).

3. Status of claims.

The application was filed with claims 1-19. Claims 20-32 were added during prosecution, claims 2-5, 8, 9, and 12-19 were cancelled without prejudice, and claims 6, 7, 10, 11, 20-23, 27 and 32 were withdrawn from consideration due to restriction requirements. Claims 1, 24-26 and 28-31 have been rejected. The appealed claims are claims 1, 24-26 and 28-31.

4. Status of amendments.

All amendments have been entered.

5. Summary of claimed subject matter.

There are two independent claims involved in this appeal: claims 1 and 28. Claim 1 recites a woodworking machine with a support frame (such as machine 10 and operative structure 12) and a cutting tool (shown schematically at 14 and as a circular blade at 40). The machine also includes a safety system configured to detect a dangerous condition between a person and the cutting tool and to perform a predetermined action to mitigate the dangerous condition, such as stopping or retracting the cutting tool. The safety system is shown schematically at 18 and discussed throughout the specification, including page 5, line 4, through page 7, line 5 in the specification as filed, or paragraphs 21-24 in the specification as published. Different possible actions to mitigate the dangerous condition are described generally on page 6, lines 5-16 in the specification as filed and in paragraph 23 in the specification as published. The safety system includes a cartridge (such as cartridge 80) removably coupled to the support frame. The cartridge is adapted to perform the predetermined action a single time and then to be replaced. The cartridge has one or more single-use components configured to be expended when the cartridge performs the predetermined action. Examples of single-use components include fusible member 70 and pawl 60. The cartridge is described throughout the specification, including page 11, line 19 through page 13, line 19 in the specification as filed, or paragraphs 32-35 in the specification as published.

Woodworking machines as described in claim 1 might include table saws, miter saws, chop saws, radial arm saws, circular saws, band saws, jointers, and planers. However, as far as applicant is aware, the only woodworking machines ever manufactured and sold with a safety system as recited in claim 1 are table saws sold under the name SawStop. SawStop table saws detect accidental contact between a person and the blade, and then stop and retract the blade in milliseconds to mitigate any injury. Within the last few years, SawStop saws have become the leading industrial table saws in the country and have mitigated what would otherwise have been serious injuries in hundreds of cases.¹

Claim 28 recites a woodworking machine with a support frame and cutting tool, as described. It also recites a safety brake means for detecting a dangerous condition between a person and the cutting tool and for stopping movement of the cutting tool upon detection of the dangerous condition. The “safety brake means” limitation is written as a means-plus-function limitation under 35 USC 112, sixth paragraph. The structure, material or acts described in the specification that correspond to the safety brake means include detection subsystem 22 and reaction subsystem 24 configured for stopping movement of the cutting tool. Those structures are discussed throughout the specification, including page 5, line 4, through page 7, line 5 in the specification as filed, or paragraphs 21-24 in the specification as published. A disclosed embodiment of the reaction subsystem for stopping movement of the cutting tool includes pawl 60, fusible

¹ SawStop saws are made and sold by SawStop, LLC, a wholly-owned subsidiary of applicant SD3, LLC. Pictures and videos of SawStop saws can be seen on the Internet at www.sawstop.com.

member 70, spring 66 and firing subsystem 76 assembled in cartridge 80 (discussed on page 15, line 1 through page 18, line 13 in the specification as filed, and in paragraphs 38-45 in the specification as published).

6. Grounds of rejection to be reviewed on appeal.

The sole ground of rejection presented for review is a rejection of claims 1, 24-26 and 28-31 under 35 USC 103(a) as obvious in light of Lokey (US Patent 3,785,230) or Yoneda (US Patent 4,117,752) combined with Baur (US Patent 3,695,116) and Bielinski (US Patent 5,606,889).

7. Argument.

The examiner rejected claims 1, 24-26 and 28-31 under 35 USC 103(a) as obvious in light of Lokey (US Patent 3,785,230) or Yoneda (US Patent 4,117,752) combined with Baur (US Patent 3,695,116) and Bielinski (US Patent 5,606,889).² Lokey describes a system to detect proximity of a hand to a blade in a hand-held circular saw or a table saw, and to stop the blade by using solenoids to push brake members or a rubber block into contact with the blade. Yoneda discloses a system to detect contact between a person and the blade in a band saw, and to stop the blade with electromagnetic brakes that clamp both the blade and a plate integral with a drive pulley. The examiner says both Lokey and Yoneda disclose what can be thought of as cartridges, but neither reference “explicitly teach[es] that the cartridge is adapted to be replaced after perform[ing] the predetermined action a single time,” or that the “cartridge has one or more single-use components to be expended when the cartridge performs

² Applicant groups claims 24-26 and 28-31 with claim 1 to simplify the issues on appeal even though those claims include additional limitations not disclosed or suggested by the cited references.

the predetermined action.” (Final Office Action mailed 5-2-08, page 3, lines 3-4 and 6-7.) The examiner cites Baur and Bielinski for those limitations. Specifically, the examiner says Baur discloses “spring loaded actuators that are electrically responsive by tensioned wires,” and Bielinski discloses actuators with fusible members “contained in replaceable/removable cartridges.” (Final Office Action mailed 5-2-08, page 3, lines 8-9 and 12.) Therefore, according to the examiner, it would have been obvious to replace the solenoid of Lokey or the electromagnetic brakes of Yoneda with “one or more single use components comprising fusible members that enable actuation of a braking mechanism by a spring actuator” as disclosed by Baur and Bielinski. (Final Office Action mailed 5-2-08, page 3, lines 15-17.)

The Board should reverse the examiner’s rejection because: 1) the cited references fail to show a removable cartridge adapted to perform a predetermined action a single time and then to be replaced, 2) Lokey and Yoneda teach away from a cartridge as recited in the claims, and 3) there was no reason that would have prompted the combination. Accordingly, the examiner failed to establish a prima facie case of obviousness.

1. The cited references fail to show a removable cartridge.

In Lokey, the examiner considers rubber block 25 and solenoid 126 to be a cartridge. (Final Office Action mailed 5-2-08, pages 2-3.) That rubber block and solenoid, however, cannot be a cartridge as recited in claim 1 because neither is described as removable or adapted to be replaced after performing an action a single time. (Lokey, column 2, lines 47-55.) Instead, Lokey specifies “solenoid 126 is mounted

on the frame 112" and rubber block 125 "is connected to [a] slide block 124" which, in turn, is "slidably mounted on the frame 112." (Lokey, column 2, lines 46-51.)

In Yoneda, the examiner considers electromagnetic clamp brake 20 and "its actuator means" to be a cartridge. (Final Office Action mailed 5-2-08, page 3.) That cannot be correct because electromagnetic clamp brake 20 is "mounted on base 24." (Yoneda, column 2, line 35.) Also, the "actuator means" for electromagnetic clamp brake 20 is an electric current that passes through a brake winding (Yoneda, column 3, lines 3-5), and electromagnetic clamp brake 20 is designed for repeated operations, not for a single use.

Baur discloses an actuator made from a "collapsible dual piston assembly." (Baur, column 1, lines 50-68.) Baur's actuator is like a squib in that it is configured at the end of lead-in wires 26 and 36. (Baur, column 2, lines 51-63.) The examiner does not contend that Baur discloses a cartridge. (Final Office Action mailed 5-2-08, page 3, lines 7-10.)

Bielinski discloses an actuator with spool halves that fit around a shaft and restrict the shaft from moving. The spool halves are held together by a coil and wire link. The link breaks when sufficient electric current passes through it and the spool halves then separate to release the shaft. (Bielinski, column 1, lines 50-67.) The examiner contends that Bielinski discloses a cartridge. (Final Office Action mailed 5-2-08, page 3, lines 10-14.) The only "cartridge" mentioned in Bielinski, however, is cartridge assembly 62 identified in Figure 5, and that cartridge assembly is an electrical insulator. Specifically, it is an electrically insulating material with an outer surface conforming to a cutout portion of the spool. (Bielinski, column 2, line 65 through column 3, line 1.)

Bielinski's "cartridge assembly" is not a cartridge, as that term is used in applicant's claim 1. In a safety system as recited in applicant's claim, one or more components will have to be replaced after activation of the safety system, and therefore applicant teaches that those components can be included "in a cartridge that can be easily replaced." (Specification, page 11, lines 11-12, or paragraph 31 in the specification as published.) As an exemplary embodiment, applicant discloses cartridge 80 having a housing 82 with various components contained within the housing. (Specification, page 11, lines 12-18, or paragraph 31 in the specification as published.) Bielinski does not disclose anything like a cartridge that encloses other components, or a cartridge that can be easily replaced after use. Rather, Bielinski's "cartridge assembly 62" is simply an insulator.

Applicant recognizes that the cited references disclose safety systems and actuators, but none of the references discuss removable cartridges or any rationale for including removable cartridges in a safety system. Thus, the cited references do not support a prima facie case of obviousness.

2. Lokey and Yoneda teach away from a cartridge as recited in the claims.

Lokey and Yoneda teach away from a cartridge as recited in the claims because they both disclose brake systems designed for repeated actuations. Specifically, the solenoids in Lokey are designed to actuate the brake repeatedly without having to be replaced. Similarly, the electromagnetic brakes in Yoneda are designed for repeated actuations without having to be replaced. The actuators disclosed in Baur and Bielinski, in contrast, cannot be used for repeated actuations. If the solenoids or electromagnetic brakes in Lokey and Yoneda were somehow replaced with actuators as disclosed in

Baur or Bielinski, then the resulting brake systems would no longer be capable of repeated actuations. That change of function shows that Lokey and Yoneda teach away from using an actuator as disclosed in Baur or Bielinski, and as a general rule, references that teach away from a claimed invention do not support a prima facie case of obviousness. See, e.g., McGinley v. Franklin Sports, Inc., 262 F.3d 1339, 1354, 60 USPQ2d 1001 (Fed. Cir. 2001) (“We have noted elsewhere, as a ‘useful general rule,’ that references that teach away cannot serve to create a prima facie case of obviousness.” Citation omitted.); In re Haruna, 249 F.3d 1327, 1335-1336, 58 USPQ2d 1517 (Fed. Cir. 2001) (“Because Benne teaches away from a final product having a broad transparent outer region, it does not render the claimed design obvious.”); In re Geisler, 116 F.3d 1465, 1469, 43 USPQ2d 1362 (Fed. Cir. 1997) (“[A] prima facie case of obviousness can be rebutted if the applicant ... can show ‘that the art in any material respect taught away’ from the claimed invention.” Quoting In re Malagari, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974)); In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984) (inoperable modification teaches away); In re Sponnoble, 405 F.2d 578, 587, 160 USPQ 237 (CCPA 1969) (references teach away because the combination “would produce a seemingly inoperative device”).

3. There was no reason that would have prompted the combination.

The Supreme Court explained in KSR International Co. v. Teleflex Inc., 550 US ___, ___, 127 S.Ct. 1727, 1741, 167 L.Ed.2d 705, 82 USPQ2d, 1385 (2007):

[I]t can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.

In the case at hand, the reason given by the examiner that would have prompted the combination of Lokey or Yoneda with Baur and Bielinski was “to provide a fast acting, less expensive, smaller actuator that facilitates efficiency of the operation as taught by Baur and Bielinski.” (Final Office action mailed 5-2-2008, page 3.) The examiner, however, failed to identify any support for his conclusion that the actuators disclosed by Baur or Bielinski are faster, cheaper, and smaller. To the contrary, if the examiner’s contention were true, it seems evident that actuators as disclosed by Baur and Bielinski would be used in brake systems as disclosed by Lokey and Yoneda, but there is no evidence that they have been. Instead, solenoids and electromagnetic brakes have been used. Additionally, actuators as disclosed by Baur and Bielinski would almost certainly be more expensive, at least over time, given that solenoids and electromagnetic brakes are designed for repeated use while the actuators disclosed by Baur and Bielinski are not. Given that the examiner’s proffered reason to make the combination is unsupported, it appears that the examiner fell prey to hindsight bias, which is impermissible in an obviousness analysis. Id. at ___, 127 S.Ct. at 1742.

In summary, the cited references fail to disclose a cartridge as described in appellant's claims, or even any reason to employ such a cartridge. The cited references also teach away from a single-use cartridge by employing systems capable of repeated actuations. Finally, there is no support for the examiner's reason to combine references. For these reasons, the examiner has failed to establish a prima facie case of obviousness.

8. Claims appendix.

1. A woodworking machine comprising:
a support frame including a work surface for supporting workpieces;
a cutting tool supported by the frame and movable relative to the work surface to cut the workpieces supported by the work surface; and
a safety system configured to detect a dangerous condition between a person and the cutting tool and to perform a predetermined action upon detection of the dangerous condition to mitigate the dangerous condition, wherein the safety system includes a cartridge removably coupled to the support frame, wherein the cartridge is adapted to perform the predetermined action a single time and then to be replaced, and wherein the cartridge has one or more single-use components configured to be expended when the cartridge performs the predetermined action.

24. The machine of claim 1, wherein the cartridge includes a brake pawl and a housing defining an internal compartment having an opening, and further wherein the cartridge includes a biasing mechanism within the compartment and adapted to urge the brake pawl in a direction generally away from the opening.

25. The machine of claim 24, wherein the biasing mechanism is a spring positioned to extend at least partially through the opening when urging the brake pawl in a direction generally away from the opening.

26. The machine of claim 24, wherein the brake pawl is adapted to move relative to the cartridge upon detection of the dangerous condition and urging of the brake pawl in the direction generally away from the opening.

28. A woodworking machine comprising:
a support frame including a work surface for supporting workpieces;
a cutting tool supported by the frame and movable relative to the work surface to cut the workpieces supported by the work surface; and

a safety brake means for detecting a dangerous condition between a person and the cutting tool, and for stopping stop movement of the cutting tool upon detection of the dangerous condition, wherein the safety brake means comprises a cartridge removably coupled to the support frame and one or more single-use components associated with the cartridge and adapted to be used upon detection of the dangerous condition.³

29. The machine of claim 1, where the predetermined action is moving a brake into contact with the cutting tool.

30. The machine of claim 1, where the predetermined action is stopping the cutting tool.

31. The machine of claim 1, where the dangerous condition is contact between a person and the cutting tool.

³ The occurrence of the word "stop" in this limitation is a typographical error.

9. Evidence appendix.

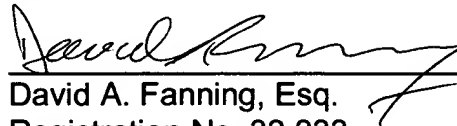
None.

10. Related proceedings appendix.

The opinions cited in section 2 are attached.

Respectfully submitted,

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CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this Appeal Brief is being deposited with the U.S. Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, or facsimile transmitted to the U.S. Patent and Trademark Office to number (571) 273-8300, on the date shown below.

Date: March 18, 2009



David A. Fanning

1 The opinion in support of the decision being entered today was
2 *not* written for publication and is *not* binding precedent of the Board.
3
4

5 UNITED STATES PATENT AND TRADEMARK OFFICE
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8 BEFORE THE BOARD OF PATENT APPEALS
9 AND INTERFERENCES
10
11

12 *Ex parte* STEPHEN F. GASS and DAVID S. D'ASCENZO
13
14

15 Appeal No. 2007-0266
16 Application No. 09/929,227
17 Technology Center 3700
18
19

20 Decided: April 30, 2007
21
22

23 Before WILLIAM F. PATE, III, ANITA PELLMAN GROSS, and JENNIFER D.
24 BAHR, *Administrative Patent Judges*.
25

26 PATE, III, *Administrative Patent Judge*.
27
28

29 DECISION ON APPEAL
30 STATEMENT OF THE CASE
31

32 This is an appeal from the final rejection of claims 1, 3, 4, 19 and 31. These
33 are the only claims remaining in the application. We have jurisdiction under 35
34 U.S.C. § 134.
35

36 The claimed subject matter is directed to a woodworking machine with a
detection system that detects a dangerous condition with respect to the operator.

1 When such a condition is detected, the machine has a brake that stops the cutting
2 tool in approximately 3 milliseconds.

3 Claim 1 reproduced below is further illustrative of the claimed subject
4 matter:

5 1. A woodworking machine comprising:

6
7 a support frame;

8
9 a motor supported by the frame;

10
11 a cutting tool supported by the frame and moveable by the motor;

12
13 a detection system adapted to detect a dangerous condition between a
14 person and the cutting tool;

15
16 a brake component adapted to engage the cutting tool, where the
17 brake component has a ready position spaced apart from the cutting tool; and

18
19 an actuator having stored energy sufficient to move the brake
20 component from the ready position into the engagement with the cutting tool
21 within approximately 3 milliseconds or less after the dangerous condition is
22 detected.

23
24 The references of record relied upon by the Examiner as evidence of
25 obviousness are:

26
27
28 Baur US 3,695,116 Oct. 3, 1972
29 Friemann US 3,858,095 Dec. 31, 1974
30 Yoneda US 4,117,752 Oct. 3, 1978
31 Andreasson US 4,653,189 Mar. 31, 1987
32 Bielinski US 5,606,889 Mar. 4, 1997
33

1 Claims 1, 19, and 31 stand rejected under 35 U.S.C. § 103 as unpatentable
2 over Yoneda in view of Friemann and Andreasson.

3 Claims 3 and 4 stand rejected under 35 U.S.C. § 103 as unpatentable over
4 Yoneda in view of Friemann and Andreasson and further in view of Baur and
5 Bielinski.

6 Claim 19 is further rejected under 35 U.S.C. § 103 as unpatentable over
7 Yoneda in view of Friemann.

8 An obviousness double patenting rejection of claim 19 has apparently been
9 withdrawn by the Examiner as it is not mentioned in the Examiner's Answer.

10 Appellants also rely on a Declaration by Dr. David A. Turcic. We have
11 carefully considered this evidence during our review of the rejections on appeal.

12 ISSUE

13 The sole issue for our consideration on appeal is whether the Examiner has
14 established the prima facie obviousness of claims 1, 3, 4, 19, and 31.

15 FINDINGS OF FACT

16 Yoneda discloses an emergency system for stopping a band blade on a band
17 saw. Yoneda discloses a support frame including arm 23 and base 24, a motor 10
18 supported by the frame, band saw blade 14 moveable by the motor and supported
19 by the frame via pulleys 11, 12, and 13, and a detection system, shown in Fig. 5,
20 connected to the blade by a bearing 16 made of conducting material. Yoneda
21 discloses two brakes for stopping the saw. The first is a clamp brake 20 mounted
22 on the frame, and the second is an electromagnetic brake B provided on pulley 11.
23 Yoneda does not disclose using stored energy to move the the brake components,
24 and Yoneda is silent with respect to how long it would take to stop the band saw
25 blade.

1 Friemann discloses another band saw for use in cutting fabric. Friemann has
2 a frame 10, 11, and a saw blade 5 that rotates on the frame via four pulleys 6, 7, 8,
3 and 9. A motor M is provided to rotate the saw blade. Contact rollers 12 are
4 provided for sensing a change in the capacitance in the saw blade that indicates the
5 proximity of the operator. The operator's touch unbalances a bridge circuit and
6 ensures a rapid braking of the motor M and the saw blade. At various locations in
7 the disclosure Friemann says that the blade can be stopped in 5 milliseconds or 10
8 milliseconds.

9 Andreasson discloses a chain saw provided with an electromechanical chain
10 brake. The chain brake is energized by an electromagnetic with a current from a
11 capacitor. The capacitor is charged by the magnetic ignition system of the chain
12 saw motor whenever the chain saw motor is operating at an RPM higher than a
13 threshold value.

14 Baur and Bielinski have been cited to show actuators that are severable
15 when provided with high electrical currents.

16 PRINCIPLES OF LAW

17 "Enablement requires that 'the prior art reference must teach one of ordinary
18 skill in the art to make or carry out the claimed invention without undue
19 experimentation.'" *Elan Pharms., Inc. v. Mayo Found.*, 346 F.3d 1051, 1054, 68
20 USPQ2d 1373, 1376 (Fed. Cir. 2003) (remanding the case to the district court for a
21 determination of whether the prior art reference enabled persons of ordinary skill
22 to make the invention without undue experimentation)(citing *Minnesota Mining*
23 *and Manufacturing Co. v. Chemque, Inc.*, 303 F.3d 1294, 1301, 64 USPQ2d 1270,
24 1278 (Fed. Cir. 2002) and *Enzo Biochem, Inc. v. Calgene, Inc.*, 188 F.3d 1362,
25 1369, 52 USPQ2d 1129, 1134 (Fed. Cir. 1999)("Whether undue experimentation
26 would have been required to make and use an invention, and thus whether a

1 disclosure is enabling under 35 U.S.C. §112, Para. 1, is a question of law that we
2 review de novo, based on underlying factual inquiries that we review for clear
3 error.”)).

4 The factual premises of the enablement analysis were addressed in *In re*
5 *Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988), the court
6 explaining that determination of whether the requisite amount of experimentation
7 is undue may include consideration of:

8 (1) the quantity of experimentation necessary, (2) the amount of direction or
9 guidance presented, (3) the presence or absence of working examples, (4)
10 the nature of the invention, (5) the state of the prior art, (6) the relative skill
11 of those in the art, (7) the predictability or unpredictability of the art, and (8)
12 the breadth of the claims.

13
14 See *Amgen, Inc. v. Chugai Pharm. Co.*, 727 F.2d 1200, 1213, 18 USPQ2d
15 1016, 1027 (Fed. Cir. 1991) (stating that the *Wands* factors are illustrative, not
16 mandatory and that what is relevant to an enablement determination depends upon
17 the facts of the particular case).

18 Furthermore, “[w]hether undue experimentation is needed is not a single,
19 simple factual determination, but rather is a conclusion reached by weighing many
20 factual considerations. *Wands*, 858 F.2d at 737, 8 USPQ2d at 1404.

21 “A claimed invention is unpatentable if the differences between it and the
22 prior art are such that the subject matter as a whole would have been obvious at the
23 time the invention was made to a person having ordinary skill in the pertinent art.”
24 *In re Kahn*, 441 F.3d 977, 985, 78 USPQ2d 1329, 1334-35 (Fed. Cir. 2006) (citing
25 35 U.S.C. § 103(a) (2000)); *Graham v. John Deere Co.*, 383 U.S. 1, 13-14, 148
26 USPQ 459, 467 (1966). “The ultimate determination of whether an invention
27 would have been obvious is a legal conclusion based on underlying findings of

1 fact.” *Id.* (citing *In re Dembiczak*, 175 F.3d 994, 998, 50 USPQ2d 1614, 1616
2 (Fed. Cir. 1999)).

3 “In assessing whether subject matter would have been non-obvious under §
4 103, the Board follows the guidance of the Supreme Court in *Graham v. John*
5 *Deere Co.* [383 U.S. at 17, 148 USPQ at 467.] The Board determines ‘the scope
6 and content of the prior art,’ ascertains ‘the differences between the prior art and
7 the claims at issue,’ and resolves ‘the level of ordinary skill in the pertinent art.’”
8 *Id.* (citing *Dann v. Johnston*, 425 U.S. 219, 226, 189 USPQ 257, 261 (1976))
9 (quoting *Graham*, 383 U.S. at 17, 148 USPQ at 467). “Against this background,
10 the Board determines whether the subject matter would have been obvious to a
11 person of ordinary skill in the art at the time of the asserted invention.” *Id.* (citing
12 *Graham*, 383 U.S. at 17, 148 USPQ 467).

13 ANALYSIS

14 As an initial matter, we note that Appellants’ arguments are based to a large
15 extent on the Declaration from Dr. Turcic. We have reviewed the Declaration and
16 find it to be legally insufficient for two reasons. As noted above in our
17 “PRINCIPLES OF LAW” section, enablement requires that the prior art reference
18 must teach one of ordinary skill in the art to make or carry out the claimed
19 invention without undue experimentation. The Declaration by Dr. Turcic does not
20 even mention undue experimentation, nor does it discuss the so-called *Wands*
21 factors. As such, the Declaration is legally insufficient to support an argument that
22 the Friemann reference lacks enabling disclosure.

23 Secondly, as our case law quotation makes clear, the issue to be established
24 is whether the reference is enabled to one of ordinary skill without undue
25 experimentation. However, as shown in paragraph 8 and paragraph 26 of the
26 Declaration, the evidence by Dr. Turcic is based on his own personal knowledge

1 rather than the knowledge possessed by one of ordinary skill in the art. This is a
2 second reason why the Declaration does not establish that the Friemann reference
3 is not an enabling disclosure.

4 Before turning to the obviousness rejection, we make one other point dealing
5 with the scope of the claimed subject matter. The Friemann reference discloses that
6 the saw blade can be stopped within 5 milliseconds or within 10 milliseconds.
7 This is the time that it takes to *stop* the saw blade. Appellants' claims are directed
8 to the time it will take to move the brake component into engagement with the
9 cutting tool. The claims are silent with respect to stopping the blade. Claim 31 is
10 even more distinguishable from the 5 milliseconds of Friemann in that in claim 31
11 the actuator starts moving the component within 3 milliseconds. Thus, as claimed,
12 it may indeed take an additional 2 milliseconds to stop the blade, if moving the
13 brake started at 3 milliseconds. The point is that Friemann completely stops the
14 blade in 5 milliseconds, whereas, as claimed, Appellants only start the stopping
15 process within 3 milliseconds. Thus, the Examiner's argument that the 3
16 millisecond and 5 millisecond time periods are substantially similar is well taken.

17 Despite the foregoing, however, we reverse the rejections of the claims on
18 appeal. In our view, the Examiner has not cited any prior art that shows an
19 actuator having stored energy sufficient to move the brake component to stop the
20 saw band disclosed in Friemann. We are in agreement with Dr. Turcic that it takes
21 substantial energy to stop the band brakes of Yoneda and Friemann. Any
22 capacitors in the circuitry of Yoneda and Friemann are merely electronic
23 components and do not store energy to move the respective actuators. With
24 respect to Andreasson, we acknowledge that Andreasson uses a capacitor to
25 energize the electromagnetic saw brake. However, the amount of energy to stop a

1 band saw band within Friemann's disclosed time frame appears to be orders of
2 magnitude more than the Andreasson capacitor can store.

3 Secondly, we find no suggestion or motivation for placing the capacitor of
4 Andreasson into the safety systems of Friemann or Yoneda. Both references
5 contemplate using electrical line power to stop their saw blades. In their
6 installations, this power is readily available, and it is unclear why one of ordinary
7 skill would use a giant capacitor to stop the saw blades.

8 Thirdly, Andreasson makes clear that the reason a capacitor is needed is that
9 the electromagnetic ignition system is the only source of electricity available.
10 With line power clearly available to Yoneda and Friemann, there appears to be
11 little incentive to use a capacitor as shown in Andreasson.

1 CONCLUSION

2 For the foregoing reasons, it is our conclusion of law that the Examiner has
3 not established the prima facie obviousness of claims 1, 3, 4, 19, and 31.

4 ORDER

5 The rejections of claims 1, 3, 4, 19, and 31 are reversed.

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7 REVERSED

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20 *SD3, LLC*

21 *9564 S.W. Tualatin Road*

22 *Tualatin, OR 97062*

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The opinion in support of the decision being entered today
is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte STEPHEN F. GASS and J. DAVID FULMER

Appeal 2007-0773
Application 10/053,390
Technology Center 3700

Decided: September 27, 2007

Before WILLIAM F. PATE, III, TERRY J. OWENS, and JENNIFER D. BAHR,
Administrative Patent Judges.

PATE, III, *Administrative Patent Judge.*

DECISION ON APPEAL

This is an appeal from the Final Rejection of claims 1 and 24-29. Claims 2-8 and 21-23 stand withdrawn from consideration. Claims 9-20 were canceled. Thus, claims 1 and 24-29 are before us for appeal.

We have jurisdiction under 35 U.S.C. §§ 134 and 6.

The claimed invention is directed to a method for detecting accidental contact between a person and a dangerous woodworking machine. Claim 29, reproduced below, is further illustrative of the claim subject matter.

29. A method for detecting accidental contact between a person and a dangerous portion of a woodworking machine, the method comprising:
 providing a first electrode electrically coupled to the person;
 providing a second electrode electrically coupled to the dangerous portion;
 transmitting a signal by one of the first or second electrodes;
 receiving the transmitted signal by the other of the first or second electrodes; and
 performing a step of sampling the signal a plurality of times to determine if the signal has at least one predetermined characteristic indicative of contact between a person and the dangerous portion.

The references of record relied upon by the Examiner as evidence of obviousness are:

Friemann	US 3,858,095	Dec. 31, 1974
Kashioka	US 5,921,367	Jul. 13, 1999
Hokodate	US 6,150,826	Nov. 21, 2000

Claims 1, 24, and 29 stand rejected under 35 U.S.C. § 103 as unpatentable over Friemann in view of Kashioka.

Claims 25-28 stand rejected under 35 U.S.C. § 103 as unpatentable over Friemann in view of Kashioka and Hokodate.

ISSUES

Inasmuch as the Examiner has withdrawn the rejection under § 112, the sole issue for our consideration is the obviousness rejections of claims 1 and 24-29 under § 103.

FINDINGS OF FACT

Friemann discloses an electrically powered band cutter. See col. 1, ll. 44-47. The band cutter is provided with a protective circuit that can stop the band in approximately $1/200^{\text{th}}$ of a second. See col. 2, ll. 15-23. With reference to Fig. 2, Friemann discloses three insulated rollers 6, 7, and 8 and an insulated drive pulley 9 connected to motor M. The endless band cutter 5 is mounted for rotation on the rollers and the pulley. Two conductive take off rollers 12 are provided on the machine but are electrically insulated from it. See col. 3, ll. 7-13. When the operator touches the band cutter the capacitance of the cutter and contact system is changed, and the change in the capacitance is detected by the bridge circuit shown in Fig. 3. See col. 3, ll. 21-33. Friemann selects a protection system using contact between the operator and the cutter rather than the proximity system in the prior art so that the machine does not continually interrupt the cutting when the worker is near the cutting band 5. See col. 1, ll. 35-41.

Kashioka discloses a safety device for a kneading machine which uses rolls 12 to mix and knead rubber. See col. 1, ll. 4-7. The worker A, who conducts the

kneading work, charges the rubber material B, into rolls 12 where the raw materials are mixed. See col. 1, ll. 35-38. When the worker's hand reaches into the gap between the rolls 12 during the charging of the rubber material, there is a danger that the hand may be caught in the rotation and squeezed into the narrow gap. See col. 1, ll. 57-67. In order to prevent this, Kashioka discloses several embodiments. These embodiments use capacitance, infrared radiation, spectrum measurements, polarization of light, and other detectors to prevent injury to the operator. For example, the embodiment in Fig. 1 uses a capacitance sensor 1 and a rod-like bar electrode 2 to sense the presence of the operator's hand. See col. 8, l. 57 – col. 9, l. 4. The capacitance sensor 1 supplies the detected electrostatic charge to a judging circuit 3, which determines whether the detected capacitance exceeds a predetermined value. See col. 9, ll. 5-8. The judging circuit then controls the drive unit 11a to stop the rolls 12. Contrary to the findings of the Examiner, we do not find any sampling in this description of the Fig. 1 embodiment of Kashioka. The passage that the Examiner points to is col. 9, ll. 1-62. This appears to describe a system in which the capacitance is continually sensed by the sensor 1, and the judging circuit continuously compares the detected capacitance to a predetermined value. We further note that in Kashioka there is no disclosure of an electrode coupled to the operator A.

Hokodate discloses distance detectors for a laser beam cutter. See col. 3, ll. 46-52. The purpose of these detectors is to provide a constant and reliable distance measurement from the focal point and the nozzle of the cutter. See col. 1, ll. 24-34. In the prior art, the distance measurement could return spurious signals due to

plasma or spatter generated during the laser cutting. Hokodate discloses using an input signal generator 15, supplying either an alternating current or an alternating voltage to a detector surrounding the laser beam. The input signal generator signal is of a pure sinusoidal wave of a specific frequency. Since this is the case, harmonics or high frequencies can be recognized and easily distinguished, thereby heightening reliability in the distance measurement. See col. 4, ll. 33-41.

PRINCIPLES OF LAW

In *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966), the Supreme Court set out a framework for applying the statutory language of § 103:

[T]he scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.” *Id.*, at 17-18, 148 USPQ at 467.

While the sequence of these questions might be reordered in any particular case, the factors continue to define the inquiry that controls. If a court, or patent examiner, conducts this analysis and concludes the claimed subject matter was obvious, the claim is invalid or unpatentable under § 103. See *KSR Int’l v. Teleflex*

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Inc., 127 S.Ct. 1727, 1734, 82 USPQ2d 1385, 1388 (2007). To facilitate review this analysis should be made explicit. *KSR* at 1741, 82USPQ2d at 1396. It can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed invention does. This is so because inventions in most, if not, all cases rely upon building blocks long since uncovered. *KSR* at 1741, 82 USPQ2d at 1396.

ANALYSIS

We will not sustain the obviousness rejections on appeal. In the first place, none of the cited references teach the steps of providing the first electrode, electrically coupled to the person using the machine. We acknowledge the Examiner has argued that the ground can be considered an electrode in the operation of the device of Friemann. Answer, page 11. We disagree. The ground is merely the electrical potential that forms a baseline for the capacitance changes in the circuit which comprises the saw blade 5 and the take-off rollers 12. The independent claims on appeal require transmitting a signal from one of the electrodes. The ground cannot be considered as either detecting the signal or transmitting the signal. Accordingly, the Examiner's argument that Friemann discloses an electrode electrically coupled to the person is not credited.

Secondly, as noted above, we are unable to state to a preponderance of the evidence that the Kashioka reference discloses sampling. We have studied the disclosure of Kashioka and particularly the disclosure of col. 9 and we agree with

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the Examiner that Kashioka could use digital techniques of sampling in the input to the judging circuit. However, it seems clear that analog detection is also comprehended by the disclosure of col. 9, as Appellants argue on page 21 of the Brief.

Finally, we are in the agreement with the Appellants, that the limitation of claim 1, of a plurality of samplings within 200 microseconds, has not been shown to be a result effective variable. In order to be deemed a result effect variable, there has to be some recognition in the art that the variable is result effective. As Appellants argue, there is no indication in any cited reference that any variable has been identified that when optimized may be used to indicate contact between a person and a woodworking machine. Therefore, the limitation directed to sampling within 200 microseconds cannot be deemed a result effective variable.

CONCLUSION AND ORDER

For the foregoing reasons, it is our determination that the Examiner has not established the prima facie obviousness of claims 1 and 24-29. The rejections on appeal are reversed.

REVERSED

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte STEPHEN F. GASS, DAVID A. FANNING,
DAVID S. D'ASCENZO, JOEL F. JENSEN,
SUNG H. KIM and ANDREW L. JOHNSTON

Appeal 2007-2769
Application 09/929,242
Technology Center 3700

Decided: August 29, 2007

Before WILLIAM F. PATE III, TERRY J. OWENS, and
JENNIFER D. BAHR, *Administrative Patent Judges*.

WILLIAM F. PATE III, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF CASE

This is an appeal from the final rejection of claims 1 and 5. Claims 19-24 stand allowed. These are the only claims in the application.

We have jurisdiction over the appeal pursuant to 35 U.S.C. §§ 6 and 134.

The claimed invention is a table saw or the like which has a blade for cutting wood. The table saw has both a detection system for detecting

contact between a person and a cutting tool, and a reaction system which retracts the cutting tool away from the cutting region and stops the rotation of the blade.

Claim 1, reproduced below, is further illustrative of the claimed subject matter.¹

1. A woodworking machine having a cutting region for cutting workpieces, comprising:

a movable cutting tool for cutting workpieces in the cutting region;

a detection system adapted to detect contact between a person and the cutting tool; and

a reaction system associated with the detection system and the cutting tool, where the reaction system is configured to retract the cutting tool at least partially away from the cutting region upon detection of contact by the detection system.

The references of record relied upon by the Examiner as evidence of obviousness are:

Friemann	US 3,858,095	Dec. 31, 1974
Terauchi	US 4,512,224	Apr. 23, 1985
Hauer (as translated)	DE 196 09 771 A1	Jun. 04, 1998

¹ It is noted that “the rotation” and “the blade” of claim 5 have not been previously recited and lack clear antecedent basis from claim 1.

Claim 1 stands rejected under 35 U.S.C. § 103 as unpatentable over Hauer in view of Friemann.

Claim 5 stands rejected under 35 U.S.C. § 103 as unpatentable over Hauer in view of Friemann and Terauchi.

ISSUES

The sole issue for our consideration in this appeal is whether the Appellants have established, by a preponderance of the evidence, that the Examiner erred in rejecting claims 1 and 5 for obviousness.

FINDINGS OF FACT

Hauer discloses a table saw with several safety features. The feature of interest is a so-called Theremin system for detecting proximity to the saw blade. The Theremin, a well-known musical instrument, is an oscillator that changes pitch based on its proximity to a body part such as a hand or finger. In this instance, the oscillator is configured to retract the cutting tool when a certain frequency or pitch is detected. Thus, we agree with Appellants that Hauer is generally directed to a proximity system for retracting a cutting tool.

Friemann on the other hand is directed to a protective circuit for use in a band saw. Friemann mentions two prior art attempts to protect the user's hands. The first involves wires that form a protective barrier around the band saw. However, these wires sometimes trap the operator's hand increasing the seriousness of accidents. See col. 1, ll. 14-19. Friemann also discloses a prior art cutter surrounded by light barriers that stop the motor

driving the cutter if a part of the body of the operator should interrupt these light barriers. See col. 1, ll. 21-41. This light barrier disclosed by Friemann as prior art is a proximity system for detecting the presence of the operator near the cutting tool.

Friemann is directed to an arrangement where the band saw is immediately stopped when the cutting band is touched by the operator. As shown in Fig. 2, the band saw 5 runs over insulated guide rollers 6, 7, 8 and drive pulley 9 rotated by motor M. Two take-up rollers 12 contact the band saw and continuously sense the capacitance of the band saw system. When the operator touches the band cutter, the capacitance of the system is thereby changed in such a manner that the bridge circuit 3 becomes unbalanced and rapid braking of the motor M results.

Finally, Terauchi discloses a fabric slitting device with a blade 12 rotated by a first motor M. Motor M1 is used to drive the arbor into and out of the workpiece A. When blade 12 advances too far into the workpiece, not only is blade 12 stopped, but motor M1 is immediately reversed to retract the blade from the cutting area.

PRINCIPLES OF LAW

In *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966), the Supreme Court set out a framework for applying the statutory language of §103:

[T]he scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as

commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.” *Id.*, at 17-18, 148 USPQ at 467.

While the sequence of these questions might be reordered in any particular case, the factors continue to define the inquiry that controls. If a court, or patent Examiner, conducts this analysis and concludes the claimed subject matter was obvious, the claim is invalid or unpatentable under §103. *See KSR Int’l v. Teleflex Inc.*, 127 S.Ct. 1727, 1734, 82 USPQ2d 1385, 1388 (2007).

Additionally, it is quite apparent that a test for analogousness based on the problem the applicant inventor was faced with is no longer a proper analysis. The Court assigned as error that “the Court of Appeals in this case was to foreclose this reasoning by holding that courts and patent examiners should look only to the problem the patentee was trying to solve (citation omitted). The Court of Appeals failed to recognize that the problem motivating the patentee may be only one of many addressed by the patent’s subject matter. The question is not whether the combination was obvious to the patentee but whether the combination was obvious to a person with ordinary skill in the art.” *KSR* 127 S.Ct at 1742, 82 USPQ2d at 1397.

ANALYSIS

Taking Appellants’ third argument first, Appellants argue that there is no motivation for one of ordinary skill to combine the references as the Examiner has. It is our finding based upon the disclosure of Friemann, that the saw art recognizes at least two safety systems—one based on sensing

proximity to the cutting device and one based on actual contact with the cutting device. The prior art also recognizes advantages and disadvantages with each of these systems. Friemann specifically states that the proximity system is a disadvantage in some types of cutting, for it continually stops the cutting machine. See col. 1, ll. 39-40. Thus, there is ample evidence for the Examiner's conclusion that some users prefer the rotation of the circular blade be stopped when there is contact between the user and the circular blade, because the user is inclined to guide or push the workpiece to areas very close to the periphery of the circular saw. This enables the user to work around the periphery of the circular saw with a higher degree of flexibility, since the brake mechanism will not be actuated unless there is actual contact between the user and the circular saw. Accordingly, we agree with the examiner's finding that a proximity system and a contact system are art recognized equivalents and interchangeable based on known techniques in the field of cutting machines. Therefore, the use of the contact system of Friemann in the table saw of Hauer is seen to be a simple substitution of one known element for another to obtain predictable results. Such a substitution was likely to have been obvious to one of ordinary skill. See *KSR* at 1731, 82 USPQ2d at 1395.

Stated another way, there are a finite number of identified predictable solutions to provide safety to the operator of a circular saw. One solution is a proximity system and another solution is a contact system. Both of these options are within the technical grasp of one of ordinary skill as shown by the prior art. Accordingly, a table saw with a contact system is not the

product of innovation but of ordinary skill and common sense. See *KSR* at 1742, 82 USPQ2d at 1397.

Appellants also argue that Hauer teaches away from the claimed combination and that the proximity system is in some measure safer than the contact system. As noted above, we are in agreement with the Examiner that these are art-recognized equivalents, and it would have been obvious to substitute a contact system for a proximity system for the Examiner's clearly stated rationale of allowing closer work to the spinning blade. As noted previously, one of ordinary skill in the saw art is fully aware of the trade-offs associated with a proximity or a contact detection system. The choice of which system to use in any given situation is merely applying known techniques to known devices with predictable results. *KSR* at 1740, 82 USPQ2d 1396.

Appellants argue that the Examiner's argument of providing greater flexibility to work is simply a wish for an enhanced product. On the other hand, we see it as a design incentive or a market force compelling a predictable variation on the part of one of ordinary skill. *Id.* at 1740, 82 USPQ2d at 1396. While we agree with the Appellants that the combination provides a less safe saw, this is a mere trade-off when viewed with the possibility of finer detailed work.

Appellants further argue that there is no reasonable expectation that a combination of these references would be successful. We disagree. We agree with the Examiner that the principles of insulation and grounding are well known, and we note that the rollers 12 of Friemann contact the side of the band, not the cutting edge. Rollers or take-offs could obviously contact

the side of the spinning blade of Friemann and a blade could be insulated from the arbor and the table structure by an insulated hub or the like. In short, Appellants are insisting on the bodily incorporation of Friemann into the table saw of Hauer. However, bodily incorporation has never been the standard of obviousness under § 103.

Additionally, Appellants argue a long felt need, but offer no formal evidence that Appellants' saw satisfies any long felt need or is any more successful than the saw of the type of Hauer. In fact, Appellants argue that a contact saw is inherently less safe than a proximity sensing saw. Appellants' anecdotes do not rise to the level of evidence.

With respect to Terauchi, Appellants argue that this reference is from a non-analogous art. The Supreme Court in *KSR* assigned it as error when Courts and Examiners look only to the problem the applicant was trying to solve. The Court stressed that the problem motivating an applicant may be only one of many addressed by the subject matter. Familiar objects may have obvious uses beyond their primary purposes, and in this sense, the teachings from the saw of Terauchi are clearly applicable to the saws of Friemann and Hauer. See *KSR* at 1742, 82 USPQ2d at 1397.

Finally, Appellants argue that there is no motivation or suggestion for combining Terauchi with Friemann and Hauer. We disagree. It is clear to us that Terauchi provides express suggestion for using both a blade brake and a blade retraction in a saw for safety purposes. Thus, one of ordinary skill would have found it obvious to use both mechanisms in a safety device.

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Application 09/929,242

CONCLUSION

The Examiner's rejections of claims 1 and 5 are affirmed.

AFFIRMED

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The opinion in support of the decision being entered
today is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte STEPHEN F. GASS and J. DAVID FULMER

Appeal 2007-2880
Application 11/098,984
Technology Center 3700

Decided: September 20, 2007

Before WILLIAM F. PATE III, TERRY J. OWENS, and
JENNIFER D. BAHR, Administrative *Patent Judges*.

WILLIAM F. PATE III, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

This is an appeal from the final rejection of claims 1, 7 and 8. Claims 2-6 and 9 stand allowed. These are all of the claims remaining in the application.

We have jurisdiction over the appeal pursuant to 35 U.S.C. §§ 6 and 134.

The claimed invention is directed to a miter saw having: 1) a blade guard movable between an extended position and a retracted position, and 2) a reaction system to detect a dangerous condition between a user and the miter saw blade to urge the blade guard into an extended position in the event of such a dangerous condition.

Claim 1 reproduced below, is further illustrative of the claimed subject matter.

1. A miter saw comprising:

a base assembly defining a cutting zone;

a circular blade supported by the base assembly;

a motor configured to rotate the blade;

a housing assembly coupled to the base assembly and configured to at least partially enclose the blade, where the housing assembly includes a blade guard movable between an extended position relatively proximal the cutting zone and a retracted position relatively distal the cutting zone; and

a reaction system configured to detect one or more dangerous conditions between a person and the blade, and to urge the blade guard toward the extended position in the event a dangerous condition is detected.

The references of record relied upon by the Examiner as evidence of obviousness are:

Dehari	US 4,774,866	Oct. 04, 1988
Serban	US 5,531,147	Jul. 02, 1996
Mooring	US 5,667,152	Sep. 16, 1997

Claims 1, 7, and 8 stand rejected under 35 U.S.C. § 103 as unpatentable over Dehari in view of Serban and Mooring.

OPINION

Both Dehari and Serban teach miter guards that have retraction systems that retract the blade guard as the saw blade is moved toward the work to be cut. Neither of these patents discloses a reaction system configured to detect a dangerous condition between a person and a blade. The Examiner has cited Mooring as disclosing this feature.

Mooring discloses a wood chipper with a drum 26 having cutter blades 30 mounted thereon. In order to prevent dangerous contact between the user 44 and the blade 30, a pivoting blade guard 67 is utilized to block access to the blade (col. 3, ll. 2, 3). In order to detect the presence of the user, rectangular tubular delivery chute 32 is provided with a 360 degree coil loop detector (col. 2, ll. 54-65). The detector is tuned to detect metal placed in the user's gloves 46. When the loop detector 48 detects the metal particles in the glove, the hydraulic cylinder with piston 62, 63 is actuated to pivot the guard 67 into protective position. In the embodiment of Fig. 4, vertically spaced feed rollers 74 and 75 can be actuated to reverse and pull the material being passed through the delivery sheet toward the worker, rather than toward the blade.

While obviousness does not require bodily incorporation, in our view, the use of the loop detector of Mooring in a miter saw would not have had a reasonable expectation of success, nor would the results of such a combination have been predictable to one of ordinary skill. We are at a loss,

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and the Examiner does not explain, how a detection system using a loop metal detecting coil and metallic gloves could be implemented in a miter saw. Therefore, we are forced to conclude that the examiner's combination of references is bottomed upon impermissible hindsight as Appellants have argued. Accordingly, we are constrained to reverse the rejection of claims 1, 7, and 8 on the ground of obviousness.

REVERSED

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte STEPHEN F. GASS,
DAVID S. D'ASCENZO and
DAVID A. FANNING

Appeal 2007-3155
Application 09/929,238
Technology Center 3700

Decided: May 30, 2008

Before WILLIAM F. PATE III, TERRY J. OWENS, and
JENNIFER D. BAHR, *Administrative Patent Judges*.

WILLIAM F. PATE III, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF CASE

This is an appeal from the final rejection of claims 9 and 30. These are the only claims remaining in the application.

We have jurisdiction over the appeal pursuant to 35 U.S.C. §§ 6 and 134.

The claimed invention is directed to a miter saw having a detection system able to detect contact between a moving blade and the user and a brake mechanism able to stop the blade when contact between a user and the blade are detected.

Claim 9, reproduced below, is further illustrative of the claimed subject matter.

9. A miter saw comprising:
- a support structure having a cutting zone;
 - a swing arm above and pivotally attached to the support structure;
 - a rotatable blade supported by the swing arm so that the blade may move into the cutting zone;
 - a handle associated with the swing arm and adapted so that a user may pivot the swing arm and blade into the cutting zone;
 - a motor adapted to drive the blade;
 - a detection system adapted to detect contact between the blade and a person; and
 - a brake mechanism adapted to stop rotation of the blade upon detection by the detection system of contact between the blade and the person.

REFERENCES

The references of record relied upon by the examiner as evidence of obviousness are:

Lokey	3,785,230	Jan. 15, 1974
Yoneda	4,117,752	Oct. 03, 1978
Brundage	4,934,233	Jun. 19, 1990
Suzuki	5,791,224	Aug. 11, 1998

REJECTION

Claims 9 and 30 stand rejected under 35 U.S.C. § 103 as unpatentable over Brundage or Suzuki in combination with Lokey and Yoneda.

FINDINGS OF FACT

Suzuki and Brundage both show the common elements of a miter or cut-off saw. Turning to Brundage, Brundage discloses a saw with a base or frame 3 having a turntable 7 and a saw blade slot 9 therein. See col. 4, ll. 10-16. Brundage discloses a saw blade 17 rotated by motor 21 with the electric motor and the blade guard and housing 19 pivotally mounted relative to the supporting frame or base 3 at pivot 25. See col. 4, ll. 30-36.

Suzuki also discloses a miter saw. The saw comprises a support frame having a base table 1 with a swing arm or main support link 10 mounted thereon. A handle 13b is provided for the user to lower the blade 15 into the work to be cut. See col. 6, ll. 22-27. The blade 15 is turned by an arbor 14 connected to a motor not shown. *Id.*

Neither Suzuki nor Brundage discloses a detection system or a brake system adapted to stop the blade upon contact by the user with the blade.

Lokey discloses an automatic safety brake for rotary blade equipment. Two embodiments are illustrated: 1) with a circular saw and 2) with a table saw. Figure 1 illustrates the brake 10 attached to an electrical circular saw

11 wherein blade 13 rotates on arbor 14. The blade is electrically insulated from the arbor 14 by washers W. See col. 1, ll. 58-62. An amplifier 15 is connected to an antenna 16 positioned close to the blade so that the blade 13 becomes a part of the electronic circuit. When a user comes close to the blade 13, the bell 20 will ring. If the user approaches closer to the blade, power will be sent to solenoid 21 which urges brakes 24 to contact the rotating blade and stop it, virtually instantaneously. See col. 3, ll. 16-31. Lokey thus discloses both a detecting means and a means for stopping the blade when user proximity is detected.

Yoneda discloses a band saw. The band saw has a frame 21, 23, 24 and insulated idler pulleys 12 and 13. The blade is rotated by pulley 11 connected to motor 10. Electromagnetic clamp brake 20 is provided along with an electrically conducting bearing 16 which constantly senses the capacitance of the rotating blade 14. When a user contacts the blade 14, the change in capacitance is detected and motor 10 is halted and automatic clamp brake 20 is actuated and immediately stops the blade. See col. 2, ll. 14-41. Accordingly, Yoneda discloses both a detecting system and a system for stopping the blade when contact between a user and the blade is detected.

PRINCIPLES OF LAW

“Section 103 forbids issuance of a patent when ‘the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.’” *KSR Int’l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1734

(2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, and (3) the level of skill in the art. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). *See also KSR*, 127 S.Ct. at 1734 (“While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.”) The Court in *Graham* further noted that evidence of secondary considerations “might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.” *Graham v. John Deere Co.*, 383 U.S. at 18.

While there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness, “the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR Int’l. Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007).

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

Id., at 1740. We must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.
Id.

ANALYSIS

We will sustain the rejection of claims 9 and 30. In our view, the use of a detecting means and a brake actuated by the detecting means as disclosed in Yoneda and Lokey when used on the miter saws of Brundage and Suzuki is merely combining prior art elements according to known methods to yield predictable results. *See KSR* 127 S.Ct. at 1739. The fact that detecting means and brake means are found on band saws, circular saws and table saws indicates to us that these are known techniques which may be used to improve similar devices, such as miter saws, in the same way. Appellants have two arguments with respect to the § 103 rejection. First Appellants argue that there is no motivation to combine the references. As noted above, we think there is ample motivation for one of ordinary skill to use these known methods in the miter saws of Brundage and Suzuki. We further note that in *KSR*, the Supreme Court held that a rigid application of such a mandatory formula as teaching, suggestion, or motivation was incompatible with its precedent concerning obviousness. *See KSR* 127 S.Ct. at 1741.

Appellants further argue that there is no reasonable expectation that the combination of references would succeed. Appellants first argue with respect to Lokey that Appellants do not know of a solenoid that is powerful enough to stop the blade in time to prevent injury. We note that Lokey describes the stoppage of the blade as virtually instantaneous.

“Enablement requires that ‘the prior art reference must teach one of ordinary skill in the art to make or carry out the claimed invention without undue experimentation.’” *Elan Pharms., Inc. v. Mayo Found.*, 346 F.3d 1051, 1054, 68 USPQ2d 1373, 1376 (Fed. Cir. 2003) (remanding the case to the district court for a determination of whether the prior art reference enabled persons of ordinary skill to make the invention without undue experimentation)(citing *Minnesota Mining and Manufacturing Co. v. Chemque, Inc.*, 303 F.3d 1294, 1301 (Fed. Cir. 2002) and *Enzo Biochem, Inc. v. Calgene, Inc.*, 188 F.3d 1362, 1369 (Fed. Cir. 1999)) (“Whether undue experimentation would have been required to make and use an invention, and thus whether a disclosure is enabling under 35 U.S.C. § 112, ¶ 1, is a question of law that we review de novo, based on underlying factual inquiries....)). Mere attorney argument is insufficient to provide a factual basis for the conclusion that a reference is non-enabling. Arguments of counsel cannot take the place of objective evidence: *In re Payne*, 606 F.2d 303, 315 (CCPA 1979); *In re Lindner*, 457 F.2d 506, 508 (CCPA 1972).

Additionally, we credit the objective statements in Lokey over the broad, conclusory arguments in Appellants’ Brief. In giving more weight to a prior publication than to a subsequent conclusory argument by counsel we are acting well within our discretion as triers of fact. See *Velandier v. Garner*, 348 F.3d 1359, 1371 (Fed. Cir. 2003). Therefore, we fully credit Lokey that his device can be stopped virtually instantaneously.

Appellants argue that Yoneda would not be successful because the bearing as shown in rollers 16 in Yoneda would not work in a miter saw, because a miter saw has a circular blade that spins instead of a band blade

along which the bearing can roll. Appellant states that the bearing would skip over the side of the circular blade because different points on the blade would have different angular velocities depending on how far the point is from the axis of rotation. We disagree with this seemingly far-fetched argument of Appellants. We are of the view that a contact roller that touches the flat side of a rotating blade at a constant radial distance from the arbor is well within the skill of a worker in the rotary saw art.

Appellants further argue that if a detection and braking system such as shown by Lokey and Yoneda were combined into the miter saws of Brundage and Suzuki, the resulting saw would be unsafe. Appellants' argument is that a miter saw, which by definition is mounted on a pivoted arm, would be thrown forcefully downwardly in the event that the angular momentum of the blade was interrupted by a braking means. However, as we have seen in the prior art, Lokey discloses both a hand-held circular saw and a table saw with a spinning circular saw blade. With respect to the circular saw embodiment of Lokey, stopping the saw instantaneously with the conservation of angular momentum creates a kick-back force that one of ordinary skill would recognize and deal with. Thus, it is not seen how the angular momentum of the suddenly stopped saw blade provides an unworkable potentially dangerous device in contradistinction to Appellants' argument.

Finally, we acknowledge Appellants' declaration by inventor Stephen F. Gass. The declaration in paragraph 5 establishes that power saws are inherently dangerous and cause many accidents. However, the raw statistics quoted in paragraph 5 do not provide any meaningful evidence that the

safety devices found in Lokey and Yoneda have failed. Appellants' argument with regard to the so-called failure is simply conjecture and does not rise to the level of evidence. With respect to paragraph 6 of the declaration, we acknowledge that Appellants' technology has received numerous awards. Putting aside the issue of the public relations aspect of these awards, we note that the declaration fails to establish any nexus between the awards and the claimed subject matter. The declaration fails to establish that these awards were even for a power miter saw as claimed in the instant application. Such generalized evidence fails to establish a nexus between the claimed subject matter and the seemingly laudatory awards received. Such evidence can in no way rebut the prima facie case of obviousness established by the examiner.

CONCLUSION AND ORDER

The obviousness rejection of claims 9 and 30 is affirmed.

Appeal 2007-3155
Application 09/929,238

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv) (2007).

AFFIRMED

vsh

SD3, LLC
9564 S.W. TUALATIN ROAD
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1 UNITED STATES PATENT AND TRADEMARK OFFICE

2
3
4 BEFORE THE BOARD OF PATENT APPEALS
5 AND INTERFERENCES
6

7
8 *Ex parte* STEPHEN F. GASS, DAVID A. FANNING,
9 DAVID J. FULMER and DAVID S. D'ASCENZO
10

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12 Appeal 2007-4061
13 Application 10/100,211
14 Technology Center 3700
15

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17 Decided: May 27, 2008
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19

20 *Before* WILLIAM F. PATE, III, TERRY J. OWENS, and
21 JENNIFER D. BAHR, *Administrative Patent Judges*.

22
23 PATE, III, *Administrative Patent Judge*.
24

25
26 DECISION ON APPEAL
27

28 STATEMENT OF CASE

29 The Appellants appeal under 35 U.S.C. § 134 (2002) from a Final
30 Rejection of claims 1, 22-24 and 30. Claims 11-14, 17-19, 21 and 25-27
31 were withdrawn from consideration, and claims 2-10, 15, 16, 20, 28 and 29

1 were previously canceled. We have jurisdiction under 35 U.S.C. § 6(b)
2 (2002).

3 The Appellants claim a machine with a moving cutting tool and a
4 safety system having a reaction subsystem that stops the moving cutting tool
5 within 10 milliseconds (ms) after detection of an unsafe condition such as
6 contact between the cutting tool and the user.

7 The sole independent claim 1 reads as follows:

- 8 1. A machine comprising:
9 an operative structure adapted to perform a task, where
10 the operative structure includes a mechanical cutting tool
11 adapted to move in at least one motion; and
12 a safety system adapted to detect the occurrence of an
13 unsafe condition between a person and the cutting tool, where
14 the safety system includes a detection subsystem adapted to
15 detect the unsafe condition, and a reaction subsystem adapted to
16 mitigate the unsafe condition;
17 where the reaction subsystem includes a brake
18 mechanism adapted to stop at least one motion of the cutting
19 tool within 10 milliseconds after detection of the unsafe
20 condition.

21
22 The prior art relied upon by the Examiner in rejecting the claims is:

23 Friemann US 3,858,095 Dec. 31, 1974
24

25 The Examiner rejected claims 1 and 22-24 under 35 U.S.C. § 102(b)
26 as lacking novelty over Friemann.

27 The Examiner also rejected claim 30 under 35 U.S.C. § 103(a) as
28 unpatentable over Friemann.

29 In addition to the Appeal Brief and Reply Brief, the Appellants also
30 rely on Declarations by Dr. David A. Turcic and Stephen F. Gass (one of the
31 Appellants).

We AFFIRM the Examiner's rejections.

ISSUES

The following issues have been raised in the present appeal¹.

1. Whether the Appellants have shown that the Examiner erred in rejecting claims 1 and 22-24 under 35 U.S.C. § 102(b) as lacking novelty over Friemann.

2. Whether the Appellants have shown that the Examiner erred in rejecting claim 30 under 35 U.S.C. § 103(a) as unpatentable over Friemann.

FINDINGS OF FACT

The record supports the following findings of fact (FF) by a preponderance of the evidence.

1. Friemann discloses a machine (Fig. 2) including an operative structure adapted to perform a task, where the operative structure includes a mechanical cutting tool 5 adapted to move in at least one motion and a safety system (Fig. 1) adapted to detect the occurrence of an unsafe condition between a person and the cutting tool (Col. 1, l. 44-Col. 2, l. 14), where the safety system includes a detection subsystem 3 adapted to detect the unsafe condition (Fig. 1; Col. 2, ll. 6-14; Col. 3, ll. 21-26).

2. Friemann also discloses that the safety system includes a reaction subsystem adapted to mitigate the unsafe condition, the reaction

¹ An obviousness-type double patenting rejection of claims 1 and 22-24 has been withdrawn by the Examiner (Ans. 4). Thus, the Appellants' arguments regarding the double patenting rejection are moot.

1 subsystem including a brake mechanism adapted to stop at least one motion
2 of the cutting tool within 10 ms after detection of the unsafe condition (Figs.
3 3 to 6; Col. 2, ll. 6-14; Col. 3, ll. 26-36; Col. 3, l. 67-Col. 4, l. 7; Col. 4, ll.
4 52-53).

5 3. Friemann further specifically discloses that “[e]xperiments have
6 shown that with a protective circuit arrangement in accordance with the
7 invention it is possible for a band cutter to be stopped in about 1/200th
8 second”, i.e. 5 ms (Col. 2, ll. 15-20).

9

10 PRINCIPLES OF LAW

11 “A claim is anticipated only if each and every element as set forth in
12 the claim is found, either expressly or inherently described, in a single prior
13 art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d
14 628, 631 (Fed. Cir. 1987). “To serve as an anticipating reference, the
15 reference must enable that which it is asserted to anticipate. ‘A claimed
16 invention cannot be anticipated by a prior art reference if the allegedly
17 anticipatory disclosures cited as prior art are not enabled.’” *Elan*
18 *Pharmaceuticals, Inc. v. Mayo Foundation for Medical Education and*
19 *Research*, 346 F.3d 1051, 1054 (Fed. Cir. 2003) *citing Amgen, Inc. v.*
20 *Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1354 (Fed. Cir. 2003).

21 Moreover, “[s]ection 103 forbids issuance of a patent when ‘the
22 differences between the subject matter sought to be patented and the prior art
23 are such that the subject matter as a whole would have been obvious at the
24 time the invention was made to a person having ordinary skill in the art to
25 which said subject matter pertains.’” *KSR Int’l Co. v. Teleflex Inc.*, 127 S.Ct.

1 1727, 1734 (2007). “References relied upon to support a rejection under 35
2 USC 103 must provide an enabling disclosure”. *In re Payne*, 606 F.2d 303,
3 314 (CCPA 1379).

4 Enablement under 35 U.S.C. § 112, first paragraph, requires the
5 specification to “contain a written description of the invention . . . in such
6 full, clear, concise, and exact terms as to enable any person skilled in the art
7 to which it pertains . . . to make and use the same . . .” There is a
8 presumption that “both the claimed and unclaimed disclosures in a prior art
9 patent are enabled.” *Amgen*, 314 F.3d at 1355. The burden of rebutting the
10 presumption of enablement of the cited prior art by a preponderance of the
11 evidence falls on the applicant. *In re Sasse*, 629 F.2d 675, 681 (CCPA
12 1980).

13 The test for enablement is whether one skilled in the art would have to
14 resort to undue experimentation in order to practice the invention. *In re*
15 *Angstadt*, 537 F.2d 498, 503 (CCPA 1976). Undue experimentation analysis
16 may include consideration of: (1) the quantity of experimentation necessary,
17 (2) the amount of direction or guidance presented, (3) the presence or
18 absence of working examples, (4) the nature of the invention, (5) the state of
19 the prior art, (6) the relative skill of those in the art, (7) the predictability or
20 unpredictability of the art, and (8) the breadth of the claims. *In re Wands*,
21 858 F.2d 731, 737 (Fed. Cir. 1988). These factors are illustrative, and what
22 is relevant to an enablement determination depends upon the facts of the
23 particular case. *Amgen, Inc. v. Chugai Pharmaceutical Co., Ltd.*, 727 F.2d
24 1200, 1213 (Fed. Cir. 1991).

25

ANALYSIS

Rejection of claims 1 and 22-24 under 35 U.S.C. § 102(b)

The Examiner rejected claims 1 and 22-24 as lacking novelty over Friemann. The Friemann reference discloses each and every limitation of independent claim 1 including stopping of a band cutter in 10 ms and 5 ms (FF 1 to 3; Ans. 4). In this regard, Friemann discloses that stopping of a band cutter in 5 ms has been experimentally shown, thereby purporting to have actually reduced the invention to practice (FF 2 and 3).

Initially, the Appellants argue the patentability of these claims together as a group in the Appeal Brief. Correspondingly, we select independent claim 1 to decide the appeal of these claims, dependent claims 22-24 standing or falling with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(vii).

The Appellants contend that statements in Friemann regarding stopping of the band cutter in 10 ms and 5 ms are either mistakes or over statements because it is physically impossible for the machine of Friemann to stop the band cutter within the disclosed time (App. Br. 10). Thus, the Appellants contend that because Friemann does not enable the brake mechanism of claim 1 as established by the Declarations of Stephen F. Gass and Dr. David A. Turcic, Friemann cannot anticipate claim 1 (App. Br. 11 and 12 to 21).

The Examiner states that the Declarations have been considered but that they are insufficient to establish non-enablement because they merely contain the opinions of the declarants on how the device of Friemann operates without conducting any physical tests (Ans. 5). The Examiner also notes that the Declarations do not provide any statements from inventor

1 Friemann as to enablement of the disclosed brake mechanism (Ans. 6).
2 Furthermore, the Examiner notes numerous prior art references to rebut Dr.
3 Turcic's statement that there are no relays that can operate to stop the band
4 cutter of Friemann within the time frame required (Ans. 6).

5 We agree with the Appellants that a physical test is not required to
6 establish non-enablement (App. Br. 21). Providing statements from the
7 inventor of the cited prior art invention is also not a requirement to establish
8 non-enablement. However, we agree with the Examiner that the Appellants
9 failed to establish non-enablement of Friemann as discussed in further detail
10 *infra*.

11 Initially, having reviewed the Declarations in evidence, we find them
12 to be deficient as a matter of law for establishing non-enablement of
13 Friemann. As explained *supra* in the Principles of Law section, the prior art
14 reference must enable one of ordinary skill in the art to make or carry out the
15 claimed invention without undue experimentation. The Declarations of
16 record do not discuss whether undue experimentation would be required to
17 implement the protective circuit in the disclosure of Friemann, or discuss the
18 various factors set forth in *In re Wands*. In addition, the Declaration by Dr.
19 Turcic focuses on his own personal knowledge rather than the
20 experimentation necessary for one of ordinary skill to make and use the
21 invention the reference discloses (Decl. of Turcic ¶¶ 8, 14, 15, 21 and 26).

22 Notwithstanding the noted deficiencies, we will discuss the
23 Declarations in detail in the interest of a complete record. Although we fully
24 credit Dr. Turcic as an expert, we view the Declarations as containing
25 significant assumptions and conjecture regarding the device of Friemann,

1 and do not discuss the factors for establishing non-enablement. For instance,
2 the declarants assume that Friemann's braking system uses "standard relays"
3 having certain operational characteristics (Decl. of Turcic ¶ 12; Decl. of
4 Gass ¶ 9). However, the Examiner has entered into the record, evidence of
5 relays that can operate much quicker, for instance, within 1 ms (Ans. 6).
6 The Appellants contend that the relays disclosed in the various patents cited
7 by the Examiner are not relays used to switch motors or electromagnetic
8 brakes (App. Br. 25). However, there is insufficient evidence in the record
9 as to the state of the relay art, that such relays identified by the Examiner
10 could not be used for the purposes of a braking system of Friemann, or that
11 their use would require undue experimentation by one of ordinary skill in the
12 relay art.

13 Dr. Turcic states that even if the relays of Friemann could operate the
14 motor and brake instantaneously, the motor and brake disclosed cannot stop
15 the band cutter within 10 ms because motors take time to stop and brakes
16 take time to engage (Decl. of Turcic ¶ 13). The declarants provide various
17 calculations in support of this statement (Decl. of Turcic ¶¶ 16 to 20; Decl.
18 of Gass ¶¶ 7 and 8). While it is true that the motor and the brake each
19 require time to apply a braking force, the time required is dependent on the
20 motor and the brake used as well as other factors. The declarants assume a
21 specific configuration of the motor and the brake in the analyses presented
22 rather than focusing on the undue experimentation analysis required by the
23 jurisprudence.

24 Dr. Turcic also states that he does not know of any AC induction
25 motor capable of stopping Friemann's band cutter within 10 ms by

1 application of DC braking, and that the rotational inertia of the motor
2 preclude such a result (Decl. of Turcic ¶ 14). However, the question is not
3 whether a motor is capable of stopping the Friemann's band cutter within 10
4 ms by DC braking, but rather, whether a combination of DC braking of the
5 motor and application of the electromechanical brake can be implemented in
6 view of Friemann by one of ordinary skill, without undue experimentation,
7 so that stopping of the band cutter within the 10 ms can be attained.

8 Moreover, rotational inertia is dependent on the specifics of the motor
9 used. Dr. Turcic acknowledges the existence of high performance
10 components such as a DC motor that have sufficiently low rotational inertia
11 to stop in 6 ms but states that such motors are too small and too expensive
12 (Decl. of Turcic ¶ 20). This further demonstrates the limited probative value
13 of the Declarations which make assumptions regarding specific geometry,
14 size, and cost of the components of the cutter machine.

15 The declarants also assert that the figures of the Friemann reference
16 show geometries of the various pulleys that are used in the band cutter, and
17 based on various calculations showing their rotational inertia, state that it is
18 impossible for motors to stop themselves as well as the rollers and pulleys in
19 10 ms (Decl. of Turcic ¶¶ 15-18; Decl. of Gass ¶ 6). However, it is well
20 established that patent drawings are not to scale and cannot be relied upon
21 for disclosing specific dimensions unless the specification indicates
22 otherwise. *See Hockerson-Halberstadt, Inc. v. Avia Group Intern., Inc.*, 222
23 F.3d 951, 956 (Fed. Cir. 2000). Thus, while Dr. Turcic's extensive
24 calculations establish his engineering expertise, they do not significantly aid
25 in establishing non-enablement of Friemann (Decl. of Turcic ¶¶ 16-19).

1 The Declarations further analyze electromagnetic brakes and the time
2 required for such brakes to apply their braking force (Decl. of Turcic ¶ 21;
3 Decl. of Gass ¶ 10). However, the evidence of record does not establish that
4 the disclosed electro-mechanical brake and “magnet brake” refer exclusively
5 to electromagnetic brakes. In addition, the basis for the requirement of 200
6 N-m braking force is not clear (Decl. of Turcic ¶ 21). Furthermore, as noted
7 *supra*, the braking of the combination of the motor and the
8 electromechanical brake is at issue, not just the braking of the brake.

9 Finally, the declarants state that the rotational inertia associated with
10 the various guide rollers and the drive pulley further increases the time
11 required to stop the band cutter and provide calculations of torque or power
12 required for stopping the rollers (Decl. of Turcic ¶¶ 22 to 24; Decl. of Gass ¶
13 6). However, this analysis again assumes various characteristics of the
14 pulleys such as dimension, configuration, mass, etc., and assumes that there
15 is no slippage between the band cutter and the guide rollers.

16 While we have discussed in some detail the various assumptions and
17 conjectures the declarations are based upon, we must emphasize that the
18 principal problem with the declarations is that they fail in recognizing what
19 must be proved in this instance, i.e., that one of ordinary skill could not
20 make or use the disclosure of Friemann and successfully stop the saw
21 disclosed therein in the disclosed time frame without undue experimentation.
22 We again note that it is the Appellant’s burden to rebut the presumption that
23 the unclaimed disclosures in a prior art patent are enabled. *See Amgen*, 314
24 F.3d at 1355; *In re Sasse*, 629 F.2d at 681. In giving more weight to a prior
25 publication than to subsequent conclusory statements by experts, we are

1 acting well within our discretion as triers of fact. *See Velander v. Garner*,
2 348 F.3d 1359, 1371 (Fed. Cir. 2003).
3 Therefore, based on the totality of the evidence including the Declarations of
4 record, we find that the Appellants have not satisfied their burden of
5 establishing the non-enablement of the disclosure of Friemann by a
6 preponderance of the evidence. Hence, we also find that the Appellants
7 have not established that the Examiner erred in rejecting claims 1 and 22-24
8 as lacking novelty over Friemann.

9

10 Rejection of claim 30 under 35 U.S.C. § 103(a)

11 The Examiner rejected claim 30 reciting stopping at least one motion
12 of the cutting tool in less than 5 ms after detection of the unsafe condition as
13 unpatentable over Friemann (Ans. 4). The Examiner states that Friemann
14 discloses the need for fast acting brakes, that it would have been obvious to
15 decrease the stopping time in order to increase effectiveness, and that
16 discovering the optimum or workable ranges involves only routine skill
17 (Ans. 4 and 5).

18 The Appellants initially argue that because Friemann is not enabled
19 with respect to independent claim 1 from which claim 30 depends, the
20 Examiner erred in rejecting claim 30 as well (App. Br. 26 and 27).
21 However, this argument fails because the Appellants have not shown that
22 independent claim 1 is not enabled by Friemann as discussed *supra*.

23 The Appellants further argue that even if Friemann did enable a brake
24 mechanism adapted to operate in 5 ms as specifically disclosed (i.e. enabled
25 with respect to claim 1), it still would not enable a brake mechanism which

1 is adapted to stop a cutting tool in less than 5 ms as recited by claim 30
2 (App. Br. 27). The Appellants argue that the claimed limitation is not a
3 variable that can be optimized by the use of routine skill in the art and that it
4 is a significant and difficult issue to adapt a brake mechanism to operate in
5 the recited time scale (App. Br. 27). However, the Appellants do not
6 provide any substantial evidence in support of these arguments, or
7 supplement the evidence already discussed relative to independent claim 1.

8 Thus, based on preponderance of the evidence of record, we find that
9 the Appellants have again failed to satisfy the burden of establishing non-
10 enablement of Friemann with respect to dependent claim 30. Hence, we also
11 find that the Appellants have not established that the Examiner erred in
12 rejecting claim 30.

13
14 CONCLUSIONS

15 1. The Appellants have not shown that the Examiner erred in
16 rejecting claims 1 and 22-24 as lacking novelty over Friemann.

17 2. The Appellants have also not shown that the Examiner erred in
18 rejecting claim 30 as unpatentable over Friemann.

19
20 ORDER

21 The Examiner's rejections of claims 1, 22-24 and 30 are AFFIRMED.

Appeal 2007-4061
Application 10/100,211

1 No time period for taking any subsequent action in connection with
2 this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R.
3 § 1.136(a)(1)(iv) (2007).

4

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AFFIRMED

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9 vsh

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11 SD3, LLC

12 9564 S.W. TUALATIN ROAD

13 TUALATIN OR 97062

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte STEPHEN F. GASS, J. DAVID FULMER, JOEL F. JENSEN,
BENJAMIN B. SCHRAMM and ROBERT L. CHAMBERLAIN

Appeal 2008-1064
Application 09/929,237
Technology Center 3700

Decided: February 25, 2009¹

Before WILLIAM F. PATE III, JENNIFER D. BAHR, and
LINDA E. HORNER, *Administrative Patent Judges*.

WILLIAM F. PATE III, *Administrative Patent Judge*.

DECISION ON APPEAL

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 CFR § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

STATEMENT OF CASE

This is an appeal from the final rejection of claims 1-3, 11, 20, 21, 28, 30, 32 and 34. Claims 10, 12-19 and 23-27 have been cancelled. Claims 4-9, 22, 29, 31, 33 and 35 stand withdrawn from consideration.

We have jurisdiction over the appeal pursuant to 35 U.S.C. §§ 6 and 134.

The claimed subject matter relates to a safety system and a self-test system for woodworking machines, particularly saws. The safety system consists of a detection system configured to detect a dangerous condition between a person and the tool and a reaction system for disabling the tool if a dangerous condition is detected. The self-test system comprises a control system to determine the operability of the reaction system without having to operate the reaction system.

Claim 1, reproduced below, is further illustrative of the claimed subject matter.

1. A woodworking machine comprising:
 - a cutting tool for cutting workpieces;
 - a motor configured to drive the cutting tool;
 - a detection system configured to detect a dangerous condition between a person and the cutting tool;
 - a reaction system controllable to disable the cutting tool if the dangerous condition is detected; and
 - a control system configured to determine the operability of the reaction system without having to operate the reaction system and to disable the motor if the reaction system is inoperable.

REFERENCES

The references of record relied upon by the Examiner as evidence of obviousness are:

Mowery, Jr.	US 2,785,710	Mar. 19, 1957
Kobayashi	US 3,716,113	Feb. 13, 1973 ²
Balban	US 3,863,208	Jan. 28, 1975
Yoneda	US 4,117,752	Oct. 03, 1978
Doherty	US 6,325,195 B1	Dec. 04, 2001
Razzano	US 6,564,909 B1	May 20, 2003

REJECTIONS

Claims 20 and 34 stand rejected under 35 U.S.C. § 103 as unpatentable over Yoneda in view of Mowery and further in view of Razzano.

Claims 1, 11, 21, 28, 30 and 32 stand rejected under 35 U.S.C. § 103 as unpatentable over Yoneda in view Mowery and further in view of Razzano and Doherty.

Claims 2 and 3 stand rejected under 35 U.S.C. § 103 as unpatentable over Yoneda in view of Mowery, Razzano, Doherty and further in view of Balban.

² Kobayashi is not listed in the statement of any of the rejections. Where a reference is relied on to support a rejection, whether or not in a "minor capacity," there would appear to be no excuse for not positively including the reference in the statement of rejection. *In re Hoch*, 428 F.2d 1341, 1342 n.3 (CCPA 1970).

ISSUE

The issue on appeal relates to whether Appellants have established that the Examiner erred in rejecting the claims on the grounds of obviousness. This issue turns on: a) whether the Razzano reference is available as prior art; b) whether the cited references teach or suggest all of the limitations of the claimed subject matter; and c) whether even if all elements are found in the prior art, the references have been properly combined by the Examiner.

THE STATUS OF THE RAZZANO REFERENCE AS PRIOR ART

Appellants have filed a declaration under 37 C.F.R. § 1.131 by the inventor Stephen F. Gass in order to establish that the Razzano reference is not applicable prior art. The following are Findings of Fact with respect to this issue.

1. In a declaration pursuant to 37 C.F.R. § 1.131, inventor Stephen F. Gass has established that on October 01, 1999, Appellants filed a provisional patent application number 60/157,340 for a Fast Acting Safety Stop.
2. In the declaration, inventor Stephen F. Gass has established that on February 16, 2000, Appellants filed a provisional patent application number 60/182,866 for a Fast-Acting Safety Stop.
3. On page 39 of the 60/182,866 application, a logic control system configured to conduct various safety checks when the system is switched on or off was disclosed. The logic control was depicted in Figure 9

of the application and discussed on pages 39-41 of the specification. The provisional application conveys possession of a logic control system at least to the scope of the subject matter of Figure 9 and pages 39-41 of the specification. Thus this provisional application conveys possession of the subject matter of claims 1, 11, 20, 21, 28, 30, 32 and 34 on appeal.

4. On page 6 of the 60/157,340 application a capacitor adapted to store electrical charge and to trigger the disabling of the cutting tool is disclosed. An exemplary embodiment is disclosed in Figures 2 and 3. On page 10 of the 60/182,866 application a similar capacitor adapted to store electrical charge and to trigger the disabling of the cutting tool is disclosed. Figures 2 and 3 of this application are similar to Figures 2 and 3 of the 60/157,340 application. Since the 60/182,866 application contains disclosure of both the logic control of Fact 3 and the capacitor claimed in claims 2 and 3, the 60/182,866 provisional application conveys possession of the subject matter of claims 2 and 3 on appeal.

5. The Razzano application that matured into US 6,564,909 B1 was filed on May 12, 2000.

ANALYSIS

Non-provisional applications filed under 35 U.S.C. § 111(a) are entitled to the benefit of the filing date of U.S. provisional applications under 35 U.S.C. § 119(e) if the provisions of 35 U.S.C. § 119(e) are provided for. Among the provisions necessary for domestic priority is that the provisional applications satisfy the requirements of 35 U.S.C. § 112, first paragraph. Thus, the disclosure of the provisional applications relied on in

the 37 C.F.R. § 1.131 declaration must provide written description support and an enabling disclosure.

PRINCIPLES OF LAW RE: 35 U.S.C. § 112, FIRST PARAGRAPH

A “patent may only claim priority to an earlier application if the earlier application fulfills the requirements of § 112, first paragraph. In turn, that paragraph requires, in part, that the application ‘shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same.’” *Chiron Corp. v. Genentech, Inc.*, 363 F.3d 1247, 1253 (Fed. Cir. 2004) (quoting 35 U.S.C. § 112, paragraph 1).

The purpose of the written description requirement is to convey with reasonable clarity to those skilled in the art that, as of the filing date sought, applicant was in possession of the invention as now claimed. *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991). The possession test alone, however, is not always sufficient to meet the written description requirement. *Enzo Biochem, Inc. v. Gen-Probe Inc.*, 323 F.3d 956, 969 (Fed. Cir. 2002). Rather, “the written description requirement is satisfied by the patentee’s disclosure of ‘such descriptive means as words, structures, figures, diagrams, formulas, etc., that fully set forth the claimed invention.’” *Id.* (quoting *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997)).

The test for enablement is whether one skilled in the art would have to resort to undue experimentation in order to practice the invention. *In re Angstadt*, 537 F.2d 498, 503 (CCPA 1976). Undue experimentation analysis may include consideration of: (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims. *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988). These factors are illustrative, and what is relevant to an enablement determination depends upon the facts of the particular case. *Amgen, Inc. v. Chugai Pharmaceutical Co., Ltd.*, 727 F.2d 1200, 1213 (Fed. Cir. 1991).

CONCLUSION RE: BENEFIT

As stated above, it is our finding that the February 16, 2000 provisional application conveyed that the inventors were in possession of the subject matter now claimed in the claims on appeal. With respect to enablement, the Examiner has not discussed the disclosure of the provisional applications in the context of undue experimentation. Thus it is our determination that the Examiner has applied the wrong legal test to deny Appellants' benefit on this ground. Therefore, Appellants' have shown that the Examiner erred in the denial of Appellants' claim for benefit, and it is our conclusion that at least the February 16, 2000 date is an effective benefit date regarding the claimed subject matter on appeal. Inasmuch as this date is before the filing date of the Razzano reference,

Razzano is not applicable prior art with respect to the claimed subject matter on appeal.

FINDINGS OF FACT RE: OBVIOUSNESS

6. Yoneda discloses an emergency system for stopping a band blade of a cutting apparatus. See col. 1, ll. 5-10. Band saw blade 14 is powered by motor 10 which turns pulley 11. When a user comes into contact with the blade, the blade system capacitance changes. This change in capacitance is picked up by conductor pulley 16 and transmitted to amplifier A. See col. 2, ll. 14-41 and col. 3, ll. 14-26. Therefore, Yoneda discloses a detection system and a reaction system for stopping a woodworking machine. However, Yoneda does not disclose a control system configured to determine the operability of the reaction system without having to operate the reaction system itself.

7. Mowery, Jr. discloses an automatic brake for a power tool (saw). The brake pads 27 of Mowery are constantly urged towards the power tool 14 by springs 28. See col. 1, lines 48-53. Thus, to operate the saw, armature shafts 44 must be moved to pivot links 34 and pull plungers 30 against the springs. See col. 1, ll. 61-69. These solenoids are activated by the same circuitry that powers motor 10. See Fig. 2. Thus, Mowery discloses a control system that is interconnected with the motor of the woodworking machine and does not operate independently thereof.

8. Doherty discloses a machine safety guard system. The safety guard system is comprised of protective panels which, when lowered, separate the operator from the dangerous machinery. See col. 3, ll. 3-14.

The panels may have an engagable interlock which comprises a female plug 72 which receives a male plug 74 on the bottom of the panel to complete a circuit to machine motor 80 to allow current to be provided to the motor. See col. 3, l. 62 - col. 4, l. 2. Thus, Doherty discloses a reaction system which can disable a tool motor if a dangerous condition is detected, i.e., the safety shield is in the raised position.

9. Balban discloses a vehicle crash sensor control circuit which indicates a malfunction of the crash sensor or firing circuit on the control panel (dashboard). Balban is disclosed within the context of vehicle air bags. The safety control circuit of Balban is operative to continuously monitor the crash sensor and firing circuit condition during vehicle operation to provide the vehicle operator with a warning in the event the arming switch of the firing circuit is not closed. See col. 1, ll. 5-10 and col. 2, lines 4-13. This warning can be sent without the necessity of a crash occurring. Thus, Balban discloses a control system which is operable to determine the condition of a reaction system without having to operate the reaction system.

10. The Examiner does not include Kobayashi in the statement of any of the rejections on appeal. However, the Examiner appears to rely on Kobayashi in the Answer at 6:5 and 13:5.

11. Kobayashi discloses several embodiments of a braking system with a wear indicator. Taking the embodiment of Figures 1-3 as an example, spring biased stem 39 is constantly urged inwardly (toward the brake disc or to the right in Figures 1-3) by spring 41. See col. 4, ll. 21-44. When wear has occurred, stem 39 will contact inner surface of backing plate 32a and the stem will move leftwardly opening the circuit between metal disk 42 and

backing plate 33. See col. 4, l. 73-col. 5, l. 15. This open circuit is detected by the electrical system depicted in Figure 8, with the open circuit causing a warning light 78 to illuminate on the dashboard. See col. 5, ll. 16-60. Additionally, Kobayashi discloses that while the starter motor circuit is energized, the warning lamp 78 is also illuminated allowing a test of the lamp and lamp circuitry. See col. 5, ll. 60-69.

PRINCIPLES OF LAW RE: OBVIOUSNESS

“Section 103 forbids issuance of a patent when ‘the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.’” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, ___, 127 S. Ct. 1727, 1734 (2007) (quoting 35 U.S.C. § 103). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18 (1966); see also *KSR Int’l Co.*, 550 U.S. at ___, 127 S. Ct. at 1734 (“While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.”). The scope and content of the prior art includes the explicit and inherent teachings of the prior art. *In re Zurko*, 258 F.3d 1379, 1383-84 (Fed. Cir. 2001) (citing *In re Napier*, 55 F.3d 610, 613 (Fed. Cir. 1995)).

In *KSR*, the Supreme Court emphasized “the need for caution in granting a patent based on the combination of elements found in the prior art,” *KSR Int’l Co.*, 550 U.S. at ___, 127 S. Ct. at 1739, and discussed circumstances in which a patent might be determined to be obvious. In particular, the Court pointed out that “the principles laid down in *Graham* reaffirmed the ‘functional approach’ of *Hotchkiss* [*v. Greenwood*], 11 How. 248 [(1851)].” *KSR Int’l Co.*, 550 U.S. at ___, 127 S. Ct. at 1739 (citing *Graham*, 383 U.S. at 12). The Court reiterated that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Id.* The Court also noted that “when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.” *Id.* at ___, 127 S. Ct. at 1740 (citing *United States v. Adams*, 383 U.S. 39, 50-51 (1966)). The Court explained:

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

Id. The operative question in this “functional approach” is thus “whether the improvement is more than the predictable use of prior art elements according to their established functions.” *Id.*

In rejecting claims under 35 U.S.C. § 103(a), the examiner bears the initial burden of establishing a prima facie case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). *See also In re Piasecki*, 745 F.2d 1468, 1472 (Fed. Cir. 1984). Only if this initial burden is met does the burden of coming forward with evidence or argument shift to the appellant. *Id.* at 1445. *See also Piasecki*, 745 F.2d at 1472. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. *See Oetiker*, 977 F.2d at 1445; *Piasecki*, 745 F.2d at 1472.

ANALYSIS

We acknowledge that the Examiner's applied references contain bits and pieces including a detection system, a reaction system and a control system. However, we do not find articulated reasoning with rational underpinnings that would support the legal conclusion of obviousness. For example, only Balban actually shows a control system configured to determine the operability of the reaction system without having to operate the reaction system itself. However, it is unclear how the crash sensing control circuitry and the firing circuitry of Balban could be applied to the brake and motor switch disclosed in Yoneda. This combination is more than a simple substitution that would yield a predictable result. To the extent that the Examiner relies on Kobayashi, we acknowledge that Kobayashi teaches a circuit, that when the starter motor is energized, displays an indication that the warning lamp is operable. However, the warning lamp of Kobayashi is merely a fault indicator without a control system function.

On the other hand, while Mowery discloses a brake which is energized by the same circuit that energizes the motor, it teaches little about a control system that is operable to determine the operability of the reaction system without having to operate the reaction system itself. Similarly, Doherty teaches an interlock between the safety system and the motor circuitry. However this fails to suggest a control system operable to sense the operability of the reaction system without having to operate the reaction system itself. Thus, of all the prior art cited by the Examiner, only Balban shows such a control system. Yet, as we have already stated, it is unclear beyond a mere conclusory statement that the inclusion of this feature into Yoneda would have been obvious. Accordingly, we are constrained to reverse the obviousness rejections on appeal.

CONCLUSION

The rejection of claims 20 and 34 as unpatentable over Yoneda in view of Mowery and Razzano are reversed.

The rejection of claims 1, 11, 21, 28, 30 and 32 as unpatentable over Yoneda in view Mowery in view of Razzano and Doherty is reversed.

The rejection of claims 2 and 3 as unpatentable over Yoneda in view of Mowery, Razzano, Doherty and Balban is reversed.

REVERSED

vsh

Appeal 2008-1064
Application 09/929,237

SD3, LLC
9564 S.W. Tualatin Road
Tualatin OR 97062

1 UNITED STATES PATENT AND TRADEMARK OFFICE

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3
4 BEFORE THE BOARD OF PATENT APPEALS
5 AND INTERFERENCES
6

7
8 *Ex parte* STEPHEN F. GASS, DAVID A. FANNING,
9 J. DAVID FULMER and RANDALL J. HUEBNER
10

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12 Appeal 2008-1843
13 Application 10/345,630
14 Technology Center 3700
15

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17 Decided: September 17, 2008
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19
20 *Before* JENNIFER D. BAHR, LINDA E. HORNER and DANIEL S. SONG,
21 *Administrative Patent Judges.*

22
23 SONG, *Administrative Patent Judge.*
24

25 DECISION ON APPEAL
26

27 STATEMENT OF THE CASE

28 The Appellants appeal under 35 U.S.C. § 134 (2002) from a Final
29 Rejection of claims 15-17, 19, 21 and 22. Claims 1-14, 18 and 20 have been
30 canceled, and claims 23-25 have been withdrawn from consideration. We
31 have jurisdiction under 35 U.S.C. § 6(b) (2002).

1 The Appellants claim a saw with a system for detecting the
2 occurrence of an unsafe condition such as contact of the cutting tool by the
3 user. The saw includes a direct drive for driving a cutting tool (e.g., a
4 circular saw blade) where at least the drive shaft of the motor armature is
5 electrically isolated from electrical ground so that an electric signal (e.g.,
6 capacitance) may be imparted on the cutting tool for use in detecting the
7 occurrence of an unsafe condition.

8 The sole independent claim 15 reads as follows:

9 15. A saw comprising:
10 a circular cutting tool, where the cutting tool is adapted to
11 spin;
12 a direct drive mechanism configured to spin the cutting
13 tool, where the direct drive mechanism includes a motor
14 armature having a drive shaft, where the drive shaft is
15 operatively coupled to the cutting tool so that the drive shaft
16 can spin the cutting tool without a belt, and where the operative
17 coupling between the drive shaft and the cutting tool establishes
18 an electrical coupling between the drive shaft and the cutting
19 tool;
20 a detection system adapted to detect the occurrence of an
21 unsafe condition between a person and the cutting tool, where
22 the detection system is adapted to impart an electrical signal on
23 the cutting tool; and
24 a reaction system adapted to mitigate the unsafe
25 condition upon the detection of the unsafe condition by the
26 detection system;
27 where at least the drive shaft is electrically isolated from
28 electrical ground so that the electric signal may be imparted on
29 the cutting tool.
30

31 The prior art relied upon by the Examiner in rejecting the claims is:

32	Morrow	1,551,900	Sep. 1, 1925
33	Lokey	3,785,230	Jan. 15, 1974

1	Brickner, Jr.	4,694,721	Sep. 22, 1987
2	Egan, III	US 6,617,720	Sep. 9, 2003
3			

4 Claims 15-17, 19, 21 and 22 appealed herein stand rejected under 35
5 U.S.C. § 103(a).

6 We AFFIRM.

7 ISSUES

8 The following issues have been raised in the present appeal.

9 1. Whether the Appellants have shown that the Examiner erred in
10 rejecting claims 15, 16, 19, 21 and 22 under 35 U.S.C. § 103(a) as
11 unpatentable over Morrow, Lokey and Brickner, Jr.

2. Whether the Appellants have shown that the Examiner erred in rejecting claim 17 under 35 U.S.C. § 103(a) as unpatentable over Morrow, Lokey, Brickner, Jr. and Egan, III.

15
16 FINDINGS OF FACT

17 The record supports the following findings of fact (FF) by a
18 preponderance of the evidence.

1. Morrow describes a safety device for a saw including a circular cutting tool 1 that is adapted to spin, a shaft 3 and a belt 7 (i.e., a drive mechanism) configured to spin the cutting tool, and a conductive sleeve 9 between the shaft 3 and the cutting tool 1 (Pg. 1, ll. 74-79; Pg. 2, ll. 48-54; figs. 1 and 2). Morrow also describes a reaction system (fig. 3) within box 8 which includes a circuit adapted to mitigate the unsafe condition by shocking the user if the user comes too close to the cutting tool (Pg. 1, ll. 84-88; Pg. 2; ll. 22-32; figs. 1-3).

1 2. Morrow teaches that the shaft 3 is rotated by a belt 7 “or other
2 suitable means in the usual manner” (Pg. 1, ll. 78-79; fig. 1).

3 3. Morrow further teaches that the parts of the saw (except for the
4 cutting tool) including flanges 2, shaft 3, bearings 4 and frame 5 can be
5 made of insulating material (Pg. 1, ll. 79-83; fig. 1).

6 4. Brickner describes a motor unit 18 for a circular saw 16
7 including a motor armature 40 with a drive shaft (not numbered) where the
8 drive shaft is operatively coupled to the cutting tool 20 so that the drive shaft
9 can spin the cutting tool (col. 4, ll. 7-11 and 61-68; figs. 1 and 3). Brickner
10 further describes that gear speed reducers without a belt (i.e., direct drive
11 gear systems) are known and can be used in place of a belt speed reducer
12 (col. 2, ll. 9-14; col. 6, ll. 48-51).

13 5. Lokey describes an automatic safety brake for a saw including
14 a capacitance proximity sensor 15, 16, 18 (i.e., detection system) that is
15 adapted to detect the occurrence of an unsafe condition between a person
16 and the cutting tool 13, where the detection system is adapted to impart an
17 electrical signal on the cutting tool (col. 1, l. 64-col. 2, l. 6; fig. 6). Lokey
18 also describes a brake system 21, 24 (i.e., a reaction system), which reacts to
19 stop the rotation of the cutting tool 13 upon the detection of the unsafe
20 condition by the detection system (col. 2, ll. 2-31; figs. 2-4).

21 6. Egan teaches that switched reluctance motors are preferred over
22 conventional motors because switched reluctance motors are not
23 complicated, light in weight, reliable, efficient, and provide high starting
24 torque (col. 2, ll. 49-54; col. 3, ll. 27-29). Egan further teaches that use of
25 switched reluctance motors reduces noise (col. 3, ll. 22-26).

PRINCIPLES OF LAW

“Section 103 forbids issuance of a patent when ‘the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.’” *KSR Int’l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1734 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). In *KSR*, the Supreme Court emphasized “the need for caution in granting a patent based on the combination of elements found in the prior art,” and reaffirmed principles based on its precedent that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR*, 127 S.Ct. at 1739. The Court also explained that “when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.” *Id.* at 1739-40.

The Court noted that “[t]o facilitate review, this analysis should be made explicit.” *Id.* at 1741, citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of

1 obviousness"). However, "the analysis need not seek out precise teachings
2 directed to the specific subject matter of the challenged claim, for a court
3 can take account of the inferences and creative steps that a person of
4 ordinary skill in the art would employ." *Id.* at 1741.

5
6 ANALYSIS

7 Claims 15, 16, 19, 21 and 22

8 The Appellants argue these claims together as a group in the Appeal
9 Brief (App. Br. 5, fn. 3). Thus, we select independent claim 15 to decide the
10 appeal of these claims, dependent claims 16, 19, 21 and 22 standing or
11 falling with claim 15. *See* 37 C.F.R. § 41.37(c)(1)(vii).

12 The Appellants initially contend that the Examiner erred in finding
13 that Brickner teaches a direct drive system because the mechanism described
14 in Brickner uses a cog belt 38 to drive the cutting tool (App. Br. 7).
15 However, Brickner clearly describes that a gear type speed reducer which
16 drives the cutting tool without a belt is known¹ and can be used instead of
17 the cog belt drive system specifically illustrated (FF 4; Ans. 7). Thus, while
18 the Examiner's rejection cited the wrong portion of Brickner which
19 describes an implementation that uses a belt, we do not find this to be
20 reversible error when Brickner is considered in its entirety for what it fairly
21 teaches to one of ordinary skill in the art. *See In re Hedges*, 783 F.2d 1038
22 1039 (Fed. Cir. 1986).

23 The Appellants also contend that the cited references fail to teach or
24 suggest a motor armature having a drive shaft that is "electrically isolated

¹ The Appellants also concede that the use of a direct drive in saws is known in the Appellants' own Specification, Pg. 33, ll. 5 and 6 (Reply Br. 3).

1 from electrical ground so that the electric signal may be imparted on the
2 cutting tool.” (App. Br. 7; Reply Br. 2). In this regard, the Appellants
3 contend that Brickner and Lokey disclose shafts without any electrical
4 isolation while Morrow does not show any motor armature with a drive
5 shaft, but instead, describes a driven shaft 3 unrelated to the motor armature
6 (App. Br. 8).

7 However, the Appellant appears to be analyzing the prior art
8 references separately. The test for obviousness is what the combined
9 teachings of the references would suggest to those of ordinary skill in the art.
10 *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991). Non-obviousness cannot
11 be established by attacking references individually where the rejection is
12 based upon the teachings of a combination of references. *In re Merck*, 800
13 F.2d 1091, 1097 (Fed. Cir. 1986).

14 Morrow clearly teaches that the electrically isolated shaft 3 driven by
15 the belt 7 can be rotated by other suitable means, and the evidence of record
16 shows that such other suitable means include a direct drive, gear system (FF
17 2 and 4). The Examiner articulated that it would have been obvious to a
18 person of ordinary skill in the art to incorporate the direct drive gear system
19 of Brickner into the saw of Morrow so that the motor armature directly
20 drives the shaft 3 because not having a belt “eliminates the need of replacing
21 belt that could be worn after being used for a certain period” and “the
22 driving mechanism in Bricker is functionally equivalent to the driving
23 mechanism in Morrow” (Ans. 4). We agree with the Examiner. The recited
24 limitation merely substitutes one element for another known in the field to

1 yield a predictable result, and the Examiner articulated a rational reason as to
2 why the substitution is desirable. *See KSR*, 127 S.Ct. at 1739, 1741.

3 While the Appellants argue that the electrically isolated shaft 3 of
4 Morrow is not a drive shaft recited in claim 15 (App. Br. 8), we agree with
5 the Examiner (Ans. 9) that the recited limitation “drive shaft” is not defined
6 or restricted to a single piece, and can be broadly construed. During
7 prosecution, claims are to be given their broadest reasonable construction in
8 light of the specification as it would be interpreted by one of ordinary skill in
9 the art. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir.
10 2004). Moreover, “[a]bsent claim language carrying a narrow meaning, the
11 PTO should only limit the claim based on the specification or prosecution
12 history when those sources expressly disclaim the broader definition.” *In re*
13 *Bigio*, 381 F.3d 1320, 1325 (Fed Cir. 2004).

14 In the present case, there does not appear to be a specific definition of
15 “drive shaft”, or a disclaimer within the Specification of the term which
16 would preclude the broader construction applied by the Examiner. To the
17 contrary, the Appellants’ Specification itself describes an embodiment in
18 which the drive shaft has multiple components that are mechanically
19 interconnected together, including multiple shafts interconnected by a
20 coupling having meshed gears.² Hence, we do not find it unreasonable to

² Appellants’ Specification states:

[a]nother way to achieve electrical isolation in direct drive saws is to use a two-part drive shaft with a non-conductive coupling between the two-parts of the shaft. This type of arrangement is shown in Fig. 16. Drive shaft 2008 is made of two parts, shaft portion 2050 and shaft portion 2052. Pinion gear 2016 is on shaft portion 2052, as shown, and shaft portion 2052 is

1 construe "drive shaft" recited in claim 15 to incorporate the shaft 3 of
2 Morrow which would be driven by the output shaft of the motor when
3 Morrow and Brickner are combined.

4 The Appellants also contend that no reference suggests how to isolate
5 a drive shaft in a direct drive saw and that the Examiner is ignoring the fact
6 that directly-driven shafts cannot be electrically isolated like belt-driven
7 shafts due to the direct coupling between the shaft and the motor armature
8 (Reply Br. 2 and 3). We understand the Appellants' contention as disputing
9 the Examiner's finding that the shaft 3 is electrically isolated from electrical
10 ground when the direct drive of Brickner is implemented in the saw of
11 Morrow.

12 In the above regard, Morrow specifically teaches that various
13 components of the saw, including the bearings and frame, are preferably
14 insulated (FF 3). We further note that claim 15 does not recite any specific
15 structure for isolating the drive shaft, but instead, merely recites the end
16 result that the drive shaft is electrically isolated from electrical ground.
17 Hence, as stated by the Examiner (Ans. 9 and 10), when various components
18 such as the frame of the combination of Morrow and Brickner are made of
19 an insulating material (FF 3) as suggested by Morrow, the drive shaft of
20 Brickner would be electrically isolated from electrical ground.

supported by bearing 2053. The two shaft portions are coupled
by a coupling 2054. Coupling 2054 is non-conductive, and may
be made of ceramic, phenolic, hard plastic, or some other
appropriate, non-conductive material. Coupling 2054 may take
many forms, such as a clutch, meshing gears, or a splined or
keyed joint.

(Spec., Pg. 36, ll. 3-10; fig. 16).

1 We further note that electrical isolation of the shaft of Morrow would
2 result to the same extent as the Appellants' claimed invention by
3 implementing the bearings using insulating materials in the combination of
4 Morrow and Brickner as also taught in Morrow. In this regard, the
5 Appellants' own Specification teaches that the electrical isolation of the
6 drive shaft can be attained by utilizing insulated bushings.³ Thus, we find
7 that when the saw of Morrow is implemented with a direct drive gear system
8 as taught in Brickner based on the teachings of Morrow, the resultant
9 combination electrically isolates the drive shaft of the motor armature from
10 electrical ground as recited in claim 15.

11 The Appellants' argument with respect to the non-interchangeability of
12 the shaft of Lokey (App. Br. 8) is not persuasive because we understand the
13 Examiner's rejection as relying upon Lokey primarily for describing a

³ The Appellants' Specification states that "[t]he current carrying portions of the armature are insulated from driveshaft 2008, as is known in the art" (Spec., Pg. 33, ll. 11-12). The Appellants' Specification also states:

[a]lternatively, bearings supporting the drive could be mounted in non-conductive shells or sockets in the housing to isolate the drive One way to provide electrical isolation is shown in Fig. 14. In Fig. 14, bearings 2010, 2012, 2022 and 2024 are all mounted in insulated bushings 2040. The bushings are made of non-conductive material, such as ceramic, phenolic, or hard plastic, and typically are shaped so that they extend around the entire outside surface of the bearings. . . . Additionally, armature 2006 is isolated from shaft 2008, as stated. In this manner, the shafts, bearings, and gears are all electrically isolated from ground so that when an electrical signal is imparted to the blade, the signal remains on the blade.

(Spec., Pg. 34, ll. 7-20).

1 detection system that is adapted to impart an electrical signal on a cutting
2 tool that is isolated from electrical ground (Ans. 5).

3 The Appellants also contend that the cited references teach away from
4 the combination proposed by the Examiner because Lokey isolates the
5 cutting tool with washers and Morrow uses a belt as well as non-conductive
6 flanges to isolate the cutting tool (App. Br. 8 and 9). This argument is not
7 persuasive because Morrow specifically teaches the desirability of using
8 insulating materials for other components of the saw. Moreover, mere
9 description of an implementation in the prior art that differs from the
10 Appellants' claimed invention, without more, does not show that the prior
11 art is "teaching away" from the invention claimed. *In re Fulton*, 391 F.3.d
12 1195, 1201 (Fed. Cir. 2004).

13 The Appellants further contend that the Examiner has not identified a
14 specific teaching, suggestion or motivation to combine the references (App.
15 Br. 9). However, obviousness analysis "need not seek out precise teachings
16 directed to the specific subject matter of the challenged claim." *KSR*, 127
17 S.Ct. at 1741. As discussed *supra*, the Examiner has articulated a rational
18 reason for combining Morrow and Brickner.

19 With respect to Lokey, the Examiner states that duplicative safety
20 systems for protecting users from dangerous equipment are known and
21 articulates that it would be desirable to provide the safety system of Lokey in
22 the saw of Morrow "in order to improve the safety mechanism by providing
23 additional warning for the operator and stop the saw when a dangerous
24 condition is detected" (Ans. 5, 6 and 11). We agree.

1 The Appellants contend that if improving the saw of Morrow is the
2 objective, then one of ordinary skill need simply use Lokey's system or add
3 the warning signal and brake features instead of relying on Lokey (App. Br.
4 10). We do not fully comprehend the Appellants' argument because the
5 Examiner is relying on Lokey for disclosing those features found to be
6 missing in the combination of Morrow and Brickner. In determining the
7 patentability of a claim, the Examiner is required to make factual findings
8 based on evidence (i.e., prior art) and it is from these findings that legal
9 conclusions of patentability are made.

10 With respect to the Examiner's proffered reason for combining these
11 references, we note that there is redundancy in the resultant combination
12 because both Morrow and Lokey address the same problem, i.e., the safety
13 of the users of the saw. However, these references present differing
14 solutions to the problem: Morrow electrically shocks the user if the user's
15 body comes too close to the cutting tool; Lokey detects the approach of the
16 user to provide an auditory warning and stops the cutting tool. The failure of
17 the system in Morrow or the user not reacting in an expected manner to the
18 electric shock would result in substantial injury to the user because in the
19 saw of Morrow, the rotation of the cutting tool is maintained. Thus, we find
20 that the desirability of at least stopping the cutting tool of Morrow would
21 have been evident to one of ordinary skill in the art in view of Lokey.
22 Therefore, we find the Examiner's articulated reason to be rational and
23 sufficient to support the finding of obviousness.

24 In view of the above, we find that the Appellants have failed to show
25 that the Examiner erred in rejecting claims 15, 16, 19, 21 and 22.

1 Claim 17

2 Claim 17 specifically recites that the direct drive mechanism includes
3 a switched reluctance motor. The Examiner relies on Egan for disclosing a
4 switched reluctance motor and finds that “[i]t would have been obvious to a
5 person of ordinary skill in the art to replace the motor in Morrow’s saw, as
6 modified above, with the motor, as taught by Egan, in order to reduce the
7 noise of the saw machine during the cutting operations” (Ans. 7).

8 The Appellants initially contend that claim 17 is patentable based on
9 its dependency on claim 15 (App. Br. 11). However, this argument is not
10 persuasive because claim 15 is not patentable for the reasons discussed
11 *supra*.

12 The Appellants also contend that the reason articulated by the
13 Examiner is insufficient because the Examiner is referring to acoustic noise
14 (versus electrical noise which can interfere with the detection system as
15 taught in the Appellants’ Specification), no cited reference identifies
16 acoustic noise as a problem with direct drive saws, and no cited reference
17 suggests any reason to use a switched reluctance motor in a direct drive saw
18 (App. Br. 12).

19 However, the Appellants’ invention of claim 17 merely substitutes
20 one type of motor for another type of motor that is known. *See KSR*, 127
21 S.Ct. at 1739-40. Egan teaches various reasons why one of ordinary skill in
22 the art would utilize a switched reluctance motor, including advantages of
23 reliability, efficiency and noise (FF 6). Such known advantages have been
24 found to implicitly provide motivation to combine references. *See Dystar*
25 *Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d

1 1356, 1368 (Fed. Cir. 2006) (implicit motivation to combine exists when the
2 improvement is technology-independent and the combination of references
3 results in a product that is more desirable, for example, because it is
4 stronger, cheaper, cleaner, faster, lighter, smaller, more durable, or more
5 efficient); *see also Leapfrog Enterprises, Inc. v. Fisher Price, Inc.*, 485 F.3d
6 1157, 1162 (Fed. Cir. 2007) (“[O]ne of ordinary skill in the art . . . would
7 have found it obvious to combine the Bevan device with the SSR to update it
8 using modern electronic components in order to gain the commonly
9 understood benefits of such adaptation, such as decreased size, increased
10 reliability, simplified operation, and reduced cost.”). The Appellants’
11 argument based on the distinction between acoustic noise and electrical
12 noise is unpersuasive because “one of ordinary skill in the art need not see
13 the identical problem addressed in a prior art reference to be motivated to
14 apply its teachings.” *Cross Medical Products, Inc. v. Medtronic Sofamor*
15 *Danek, Inc.*, 424 F.3d 1293, 1323 (Fed. Cir. 2005).

16 In view of the above, we find that the Appellants have not shown that
17 the Examiner erred in rejecting claim 17 as unpatentable over Morrow,
18 Lokey, Brickner, Jr. and Egan, III.

19

20 CONCLUSIONS

21 1. The Appellants have not shown that the Examiner erred in
22 rejecting claims 15, 16, 19, 21 and 22.

23 2. The Appellants have not shown that the Examiner erred in
24 rejecting claim 17.

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1 ORDER

2 The Examiner's rejections of claims 15-17, 19, 21 and 22 are
3 AFFIRMED.

4 No time period for taking any subsequent action in connection with
5 this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R.
6 § 1.136(a)(1)(iv) (2007).

7

8 AFFIRMED

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